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EPIDEMIOLOGY OF SCARLET FEVER

A CLINICAL APPROACH *

J. E. GORDON, PH.D., M.D.

DETROIT

Individual consideration of the patient is an accepted fundamental of good clinical management of scarlet fever. A distinctly different principle guides current practice in control measures designed to protect the public against this infectious disease. Isolation is largely a group procedure, with requirements governing the disease rather than the individual concerned. Incomplete information on the epidemiology of scarlet fever is one outstanding reason for this empiric practice, based as it is on an arbitrary time element and accumulated practical experience. Lacking facts, general measures must be prescribed. However, inertia of accepted practice and the convenience of public health authority probably also contribute. Better cooperation in reporting and maintaining isolation can logically be expected, if restrictions are minimal and adjusted to individual requirements.

Group control is not entirely satisfactory. Inadequate protection is afforded a community because of failure to recognize individual differences in communicability among patients convalescing from scarlet fever. Moreover, an unequal hardship is imposed in that some persons are restricted for longer periods than individual circumstances require, while others escape too lightly. Time is only a general measure of communicability.

The ideal of individual isolation and quarantine regulations is well recognized. Curiously enough, this movement has definitely evidenced itself in the larger social structure. A recent survey of forty-four of the principal cities of the United States showed almost as many sets of group regulations as there were cities. From city to city, the regulations are highly individualized; as they affect the people dwelling in a given city, they are highly generalized. The modern trend has been toward a uniform code throughout the country, with extremely individualized requirements as it affects the persons involved. Such a code must of necessity grow more complex and definite as knowledge of scarlet fever increases. This has been the history of other diseases for which there are precise methods of control, notably diphtheria. A greater complexity in regulations should not of itself detract from the principle of individual control, if there is increased efficiency in the protection of the public and advantage to the affected persons. Perhaps too long the convenience of health authorities has dominated that of the individual. The economic loss in unnecessary restriction is not to be dismissed lightly.

Advancing knowledge of scarlet fever indicates that communicability varies with the season of the year, climatic conditions, the age of the patient, the nature of the acute stage of the disease, the subsequent course, whether simple or complicated, the type of complication, and so on. Indeed, not all instances of a given complication are alike, but they exhibit clinical differences which alter the degree of communicability. Within recent years, a bacteriologic method of control of the disease has been extensively investigated. With present technical limitations in knowledge of the streptococci, a purely bacteriologic method does not now exist which permits satisfactory control of the disease. That, however, should not discourage individualization of control measures. Data will be presented which indicate that a real advance can be accomplished by a clinical epidemiologic evaluation of the relative importance of certain complications, together with a modified bacteriologic control.

Basic data on several of the questions have been collected in Detroit during the past several years. It is planned to extend this investigation to include comprehensive field studies in representative geographic areas within the United States. Analysis of some of the results thus far obtained is presented as suggestive of the trend of scarlet fever control.

CRITERIA FOR DETERMINING EFFICIENCY IN CONTROL MEASURES IN SCARLET FEVER

Ultimate evaluation of any control measure depends on a demonstrated downward trend in the frequency of the disease. This requires observations over an extended period. Relative efficiency can be determined by a decrease in the number of patients who transmit the disease to others after release from isolation. This method is followed throughout the present analysis.

The number of infecting cases furnishes a more reliable index than the number of secondary cases. When a patient returns to a family containing only one susceptible person who contracts scarlet fever, the failure of control is just as significant as in a family with eight contacts, all of whom contract the disease. The error is as great, and no more. An infecting case is here defined as one in which a patient convalescent from scarlet fever is proved responsible for a second case in the immediate family after release from isolation.

NUMBER OF INFECTING CASES IN RELATION TO AGE OF PATIENTS WITH SCARLET FEVER

The number of infecting cases is inversely proportional to the age of the patient. A group of 3,040 patients with scarlet fever included 114, or 3.7 per

* From the Bureau of Epidemiology, Department of Health, and the Herman Kiefer Hospital.

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cent, responsible for secondary cases (table 1). The rate was highest for patients less than 1 year of age, although their number is scarcely within significant limits. The infecting case rate is definitely high for children of 1 to 4 years (5.4 per cent), with 580 cases represented. The frequency continues relatively great among older children, but the age group representing young adolescent patients evidences a marked decline. Of 213 patients aged 15 to 19 years, none were proved responsible for other cases of scarlet fever.

TABLE 1.—*Infecting Cases According to Age Groups*

Age Group	Number of Cases	Infecting Cases	
		Number	Per Cent
Under 1 year	22	2	9.1
1 to 4 years	580	31	5.4
5 to 9 years	1,197	58	4.8
10 to 14 years	445	19	4.3
15 to 19 years	213	0	0.0
20 years and over	583	4	0.7
Total	3,040	114	3.7

An appreciable proportion (4.7 per cent) of patients under 15 years of age infected one or more of their contacts after release. Those over 15 years of age were responsible for relatively few secondary cases. The convalescent carrier state has been demonstrated bacteriologically to be less prolonged with adults than with children. It is also probable that the child returns to a relatively more susceptible group than do adults. An active factor in extending communicability is the presence of complications during convalescence. These conditions develop in children much more frequently than in adults.

Distinction might well be made between children with scarlet fever and adults with the disease, in respect to required isolation. Equally prolonged isolation appears illogical. The data suggest a required minimum of not more than three weeks. The practicability of a two week interval should be determined. A significant saving in hospital days would be effected for patients thus isolated. The individual's absence from employment would be less, and the advantage to those responsible for care and support of families, material.

No significant difference between the sexes was determined in respect to the likelihood of transmitting the disease.

FREQUENCY OF INFECTING CASES AMONG PATIENTS WITH SIMPLE AND WITH COMPLICATED SCARLET FEVER

Scarlet fever differs from most other communicable diseases in that complications are apparently due to the same infectious agent responsible for the acute stage of the disease. A patient released at the end of twenty-eight days without suppurative complications of the nose, throat or ears should therefore be less a menace to others than the patient in whom complications develop. Hemolytic streptococci have been found to disappear from the nose and throat much more rapidly when secondary pyogenic conditions are absent. Infecting cases are relatively few among simple cases. The number is more than twice as great when one of the three common complications, rhinitis and sinusitis, cervical lymphadenitis or suppurative otitis media, has developed during convalescence.

TABLE 2.—*Frequency of Infecting Cases Among Patients with Simple and with Complicated Cases of Scarlet Fever*

	Number of Cases	Infecting Cases	
		Number	Per Cent
Simple	1,904	45	2.4
Complicated	1,136	69	6.0
Total	3,040	114	3.7

BACTERIOLOGIC CONTROL OF SCARLET FEVER CONVALESCENTS

The commonest control measures for scarlet fever demand a minimum isolation period expressed in days' time from onset or day of report, with provision for extension if complications occur. The effectiveness of this procedure was studied for one year as a control observation, the criterion being the usual one of infecting cases. Patients with an uncomplicated course were released at the end of twenty-eight days. If complications developed, with clinical recovery before the end of this period, the patients were likewise released at that time. When complications persisted, restriction was continued until clinical recovery; or until the fifty-sixth day, when the patient was released, irrespective of his condition.

Another year, patients without complications were released after twenty-eight days, but cultures for hemolytic streptococci were taken from the nose and throat on the twenty-fourth and twenty-fifth days. The presence or absence of streptococci was tabulated in relation to the number of patients who thereafter caused scarlet fever among familial contacts. Release was permitted irrespective of culture report.

TABLE 3.—*Infecting Cases in Relation to Cultures for Hemolytic Streptococcus Taken at Time of Release*

	Culture	Number of Cases	Infecting Cases	
			Number	Per Cent
Simple	+	174	3	1.6
	0	1,638	40	2.4
Complicated	+	92	11	11.9
	0	1,011	56	5.5

In the event of complications, isolation was terminated when two successive cultures from the nose, throat or other affected part were free from hemolytic streptococci, and under certain circumstances at the end of fifty-six days. Continued isolation for complicated cases was thus placed on a bacteriologic rather than a clinical basis, since the patient was released when the cultures became negative, irrespective of the clinical condition.

The relative value of bacteriologic control in simple and in complicated cases is shown in table 3.

Relatively few patients with uncomplicated scarlet fever (174 of 1,812) continued to have hemolytic streptococci in the nose and throat when released from isolation on the twenty-eighth day of the disease.

The gross infecting case rate was 2.4 per cent. The rate was essentially the same for the group who were carriers of hemolytic streptococci as for those who were not. Present bacteriologic methods offer no improvement over clinical methods in the control of uncomplicated cases isolated for twenty-eight days. However, the possibility exists that patients without complications may be released at an earlier date with safety. Serial culture studies during convalescence at weekly intervals might justify a trial of a three weeks' isolation program. An important reservation should be made; namely, that absence of complications, par-

ticularly of the nose, must be accurately determined by a physician experienced in scarlet fever.

By contrast, an essential difference was demonstrated for complicated cases, depending on whether hemolytic streptococci were present or absent when the patient was released. The infecting case rate was 11.9 per cent for ninety-two patients who still harbored hemolytic streptococci. The rate was 5.5 per cent for 1,011 patients whose release cultures were free from hemolytic streptococci. A definite measure of safety is provided when complicated cases are released by bacteriologic control. However, two successive negative streptococcus cultures do not provide a measure of control comparable with that of simple cases. Increased efficiency might be conferred through requirement of three negative cultures instead of two. Certain complications may be more satisfactorily controlled by a bacteriologic method, because proper specimens are more readily obtained.

RELATIVE IMPORTANCE OF THE SEVERAL COMPLICATIONS IN PROLONGING COMMUNICABILITY

Complications are not all of equal importance in prolonging communicability. A series of 1,136 patients having a complicated course was divided into four groups. The first group had, as the only complication, rhinitis and sinusitis; the second group, suppurative otitis media; and the third, cervical lymphadenitis. The last complication is of importance because of the usual relationship to prolonged or secondary infection of the throat. The fourth group included patients having more than one complication, largely combinations of the preceding three. The infecting case rates for these four groups are presented in table 4.

TABLE 4.—*Infecting Cases by Type of Complication*

Complication	Number of Cases	Infecting Cases	
		Number	Per Cent
Otitis media, suppurative	145	4	2.8
Cervical lymphadenitis	260	16	6.2
Rhinitis and sinusitis	437	28	6.4
Multiple complications	294	21	7.1
Total	1,136	69	6.0

The infecting case rate for patients having had rhinitis and sinusitis is greater than for any other group with a single complication. It is the largest group. Although representing only 14 per cent of all cases, it was responsible for 40 per cent of infecting cases. Cervical lymphadenitis ranks a close second; but, surprisingly, the patient with suppurative otitis media is scarcely more infectious than is the patient released after simple scarlet fever.

Rhinitis and Sinusitis.—Since patients with scarlet fever complicated by rhinitis are responsible for more secondary cases than any other group, a more intimate analysis of this particular complication was made.

This complication by no means constitutes an entity. One large division includes patients with nasal discharge associated with primary involvement of the sinuses. A second group includes patients in whom there developed a rhinitis corresponding to a coryza of the common cold type. Hemolytic streptococci were almost invariably associated with the first group, uncommonly with the second. The two are sufficiently distinct clinically and pathologically to suggest significant differences in ability to transmit the disease after release from isolation.

TABLE 5.—*Clinical Forms of Rhinitis Observed During Scarlet Fever Convalescence*

Type of Nasal Condition on Release	Number of Cases	Infecting Cases	
		Number	Per Cent
1. (a) Active purulent discharge	116	17	14.7
(b) Seropurulent discharge	149	13	8.7
(c) Crusting	261	13	5.0
(d) No discharge—pus on turbinates	97	3	3.0
2. Serous discharge—simple coryza	398	10	2.5

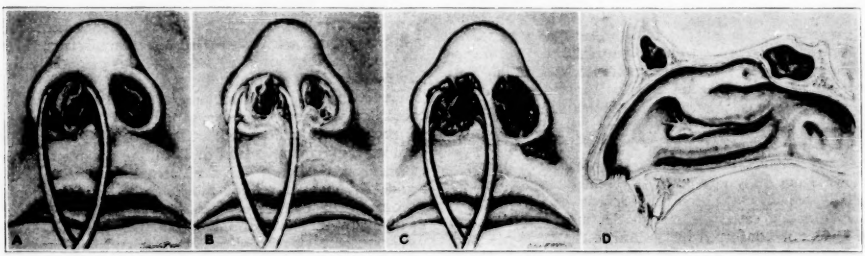

Fig. 1.—Rhinitis and sinusitis of scarlet fever convalescence: *A*, active purulent discharge; *B*, seropurulent discharge; *C*, crusting of internal and external nares; *D*, mucopus on turbinates, no discharge.

Infecting cases occurred in greater number among patients having rhinitis of the type first described than in any other group of scarlet fever convalescents of this series. The condition may be termed rhinitis and sinusitis of scarlet fever convalescence. Four clinical subdivisions were made, dependent on the duration of the process (fig. 1).

Rather striking differences exist, in respect to secondary cases, depending on the particular stage of the process at the time of release. The active condition (fig. 1 *A*) represents a high degree of communicability; the last stage (fig. 1 *D*) is scarcely more important than the simple uncomplicated case.

Bacteriologic examination of the secretion for hemolytic streptococci serves to corroborate clinical judgment in differential diagnosis. Patients of type 1 can be released with safety only after clinical recovery or after freedom from discharge and from hemolytic streptococci in cultures. The bacteriologic method alone is not adequate. Even with two negative cultures, infecting cases were frequent.

The most common form of nasal disorder was clinically a coryza of the common cold variety, type 2

(fig. 2), showing a thin serous discharge of relatively short duration. Often entire hospital wards are involved, evidently representing transmission of a secondary virus. Cultures from the secretion were usually free from hemolytic streptococci. Cases presenting this complication represented 40 per cent of all nasal conditions, and yet the infecting case rate was only 2.5 per cent, essentially the same as that observed for patients with no abnormal condition of the nasal passages (2.4 per cent). Prolonged isolation because of this complication appears unjustified.

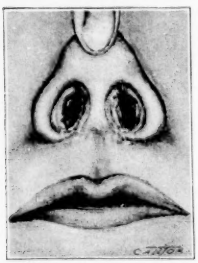

Fig. 2.—Coryza of common cold type in scarlet fever convalescence.

Suppurative Otitis Media.—Patients having purulent discharge from the ears in no way approach in importance those with similar involvement of the nasal passages (table 4). Only 4 among 145 cases became infecting cases (2.8 per cent). Most of the group were released with discharge from the ear still present, but free from hemolytic streptococci. Only one caused another case of scarlet fever. When hemolytic streptococci were demonstrable, the infecting case rate was as high as that for patients with rhinitis. Long continued isolation of patients bacteriologically free from hemolytic streptococci appears unnecessary.

Cervical Lymphadenitis.—The causal relationship between secondary angina and enlarged cervical lymph nodes is not fully appreciated. Hemolytic streptococci usually remain on the mucous surfaces of the pharynx. The infecting case rate is high. A measurable degree of safety is conferred by assurance that patients with this complication are free from hemolytic streptococci before they are released.

TABLE 6.—*Relative Importance of Clinical Discharge and Presence of Hemolytic Streptococci at Release*

Complication	Purulent Discharge	Hemolytic Streptococci	Number of Cases	Infecting Cases: Number	Infecting Cases: Per Cent
Rhinitis	+	+	20	1	5.0
	+	0	204	17	8.3
	0	+	4	1	25.0
	0	0	203	8	3.9
Otitis media	+	+	18	1	5.5
	+	0	68	1	1.5
	0	+	2	0	0.0
	0	0	50	1	2.0
Cervical adenitis	+	+	0	0	0.0
	+	0	12	3	25.0
	0	+	16	2	12.5
	0	0	225	11	4.9
Multiple complications	+	+	25	5	20.0
	+	0	150	14	9.3
	0	+	5	1	20.0
	0	0	101	1	1.0

Multiple Complications.—In a single patient, more than one of the conditions mentioned, or indeed all three of them, may develop during convalescence. Under such conditions the carrier rate is much increased, particularly if rhinitis and sinusitis are represented. The infecting case rate is high.

The relationship between clinical and bacteriologic control methods is shown in table 6.

SEASONAL PREVALENCE OF INFECTING CASES

Physicians experienced in the clinical management of scarlet fever readily appreciate the seasonal variation of complications during winter and spring months. Complications have been emphasized as the dominant factor in infecting cases. The suggested variation in infecting cases was corroborated by figure 3.

The first six months of the year showed a rate well above the annual average. The greatest frequency occurred during March and May, and the rate dropped to a low level during July to September. When a curve of complicated cases was plotted by months, it was found largely to coincide with the distribution described. The presence of complications is not the only factor in this seasonal variation, because the rate for uncomplicated cases follows the same trend.

COMMENT

The efficiency of two methods for release of patients after scarlet fever has been studied. One method represented accepted practice—an isolation period of twenty-eight days for uncomplicated cases and release of patients with complicated cases thereafter on clinical recovery, with a maximum restriction of fifty-six days. The second method included the same minimum requirements for uncomplicated cases, but patients with complications were released when two successive cultures from the affected part were found free from streptococci. The infecting case rate was essentially the same under the two conditions.

The bacteriologic control possessed the advantage of prescribing an isolation better suited to the requirements of each individual patient. This method materially reduced the average period of isolation. The gain was entirely in the group having complications, patients ordinarily hospitalized for the longest periods. Simple uncomplicated cases, because of present legal requirements, showed no variation.

The patient with complications is responsible for most secondary cases. Attempted control by cultures for hemolytic streptococci gave results in no way comparable to the rate established by simple infections. The method possesses the value of generally decreasing the required period of isolation. The number of hospital days was appreciably less when patients were so released, and the results were essentially as good from the standpoint of infecting cases.

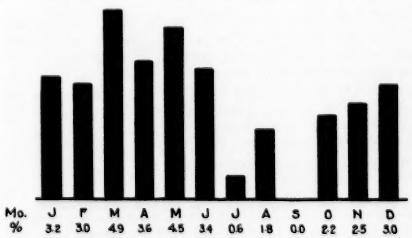

Fig. 3.—Seasonal variation in percentage of infecting cases; 1930 series, 1,948 cases; total infecting rate, 3.3 per cent.

An appreciable gain was thus made in respect to time lost from employment or from school. Patients with certain complications were safely released before complete recovery. From a clinical standpoint, this is no small consideration. Chronic suppurative conditions

are more likely to progress favorably with outdoor exercise and lessened restriction of activity.

Epidemiologic data of particular value have been made available as a result of release on a bacteriologic basis. The general reliability of the method varies with the kind of case and the kind of complication. No advantage seemingly results from requiring negative cultures of simple cases at the end of twenty-eight days. The infecting case rate was not greater for those proved carriers than for patients free from the infectious agent. The outstanding position of the complicated case as the chief problem in the control of scarlet fever has been demonstrated. Certain complications are more likely than others to disseminate the infection. In order, rhinitis and sinusitis rank first, followed by secondary

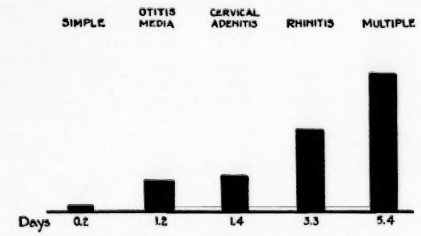

Fig. 4.—Comparison of clinical and time vs. clinical and bacteriologic methods of control (1927-1929). The average saving in hospital days per patient by complication is shown. The incidence of infecting cases was approximately the same for the two years.

throat infections and suppurative otitis media. The latter complication under bacteriologic control is no more a source of danger than the simple uncomplicated case, and patients may be safely released before clinical recovery. Clinical classification has demonstrated that certain forms of rhinitis are without particular hazard; others are extremely likely to result in secondary cases.

Evidence has accumulated to show that patients of the older age groups could very safely have been dismissed at an earlier period. During certain times of the year the secondary case rate was materially lower. The practicability of shorter periods of isolation during late spring and summer should be further investigated.

CONCLUSIONS

This study indicates the existence of significant clinical differences among patients, permitting practical modification of isolation. This approach to the problem is suggested by the precept of individual consideration, from the acute stage through convalescence to release. The evaluation of communicability by clinical methods, including laboratory procedures, gives promise of more adequate and more equalized control.

Herman Kiefer Hospital.

ABSTRACT OF DISCUSSION

DR. MILTON J. ROSENAU, Boston: I think that scarlet fever is a beautiful example to release one from the unfortunate situation in which one sometimes falls by drifting along the easier methods. Here is a disease that varies in time, in place and in accordance with the age and many other factors. If that is so, if the disease varies with the latitude, with the seasons of the year, in different age groups, and so on, why should not the quarantine restrictions, the isolation, the release and all the other public health measures adapt themselves to these variable factors which are known? There is no reason why the health officer in Florida or Alabama should apply the same restrictions to the control of scarlet fever in those localities as are applied in Connecticut, in Massachusetts, or in Michigan, where Dr. Gordon works. The same is true of summer and winter. We have little fear and there is little danger of scarlet fever spreading in the warm weather; why, then, could not the restrictions be relieved for six, seven or more months during the year, much to the advantage of the health officer, and so on? The same thing is true for the age group that we have seen. There is the difference in susceptibility, in the danger of spread, and in the menace of this infection in the different age groups. Therefore, not only by individualizing but by applying the knowledge we have of this disease and other diseases, with more precision in our public health administration based on a sound knowledge of epidemiology gained from facts such as we have just heard, I think that we shall be able to make progress along sound lines. I am favorably impressed with the yardstick that Dr. Gordon has used; that is, not taking the number of returned cases as a measure of the accuracy of the processes used, but the infecting cases, for, after all, infection is the important thing to consider in the control of this and any other disease.

DR. EDWARD S. GODFREY, JR., Albany, N. Y.: The same thought came to me that came to Dr. Rosenau, of the difficulties of investigating a disease such as scarlet fever, in which there are legal restrictions on the period of isolation that make it practically impossible for any one to determine the minimum period at which it is safe to release a patient. One must keep one's patients isolated for a certain period and is therefore unable to test the effect of a shorter period. It is a good thing that we have varying periods of quarantine in different parts of the country; to that extent at least we can see whether or not there is any substantial benefit from the longer periods. I agree that the infecting case rate is the proper rate to determine the efficacy of the release methods, provided due consideration is given to the composition of the family to which the child returns. It is obvious that if a child goes back to a family in which there are no children there are not likely to be any return cases. If an adult is attacked, it is usually after the children have been infected, and he returns to a home in which all are immune. In his chart on multiple complications, Dr. Gordon did not specify how many patients had rhinitis as one of the complications. It seems to me that a patient with nasal discharge is much more liable, even than the chart shows, to transmit the disease than one with throat or ear discharge, for the former patient gets the fingers soiled with nasal discharge. I think that Dr. Gordon ought to specify in his table the frequency of infecting cases among those having rhinitis as one of the multiple complications, as compared with those not having it. I have frequently observed that patients released from the hospital without discharge and discovered later to have caused return cases will be found, on careful inquiry, to have had a return of discharge after their release from the hospital or from quarantine. I should like to know whether that has been observed by Dr. Gordon in his cases. Finally, I think that we all ought to observe our cases more carefully and to collect figures, as Dr. Gordon has done, so that we may arrive at something like a scientific control of scarlet fever.

DR. A. CLEMENT SILVERMAN, Syracuse, N. Y.: I agree with Dr. Gordon on the influence of season on scarlatinal complications and on the incidence of infecting cases. I find it much easier in the summer months to release my patients at the end of thirty days, which is the minimum legal isolation period. At other times I find that I often have to keep them six and seven weeks because of the appearance of the mucous membranes. I have found it much less easy to differentiate between simple coryza and sinusitis. For nearly two years my associates and I have been carrying on a study in which practically every one of our pediatric patients in the scarlet fever service has had the paranasal sinuses roentgenographed. Of 159 patients roentgenographed up to April, 1931, only 8 showed normal paranasal sinuses. Frequently, to be sure, the children showing dulness or haziness in their roentgenograms do not give any evidence of nasal discharge but show increased redness of the nasal mucous membranes, and many are entirely negative clinically. So far, we have not had an opportunity to study

a control group of children in our locality who did not have scarlet fever. In the beginning of this study, it was hoped that the roentgenographing of sinuses might give us an opportunity to pick out those liable to become infecting cases; this evidently does not appear to be working out, although in one instance in which the mucous membranes looked normal clinically and the roentgenogram showed marked clouding of one antrum, the child apparently gave rise to a "return" case. It is perhaps worth emphasizing that a scarlet fever case may properly be counted as a return case only if it occurs from three to ten days following the arrival in the home of a patient discharged from the hospital. Nevertheless, it is often found that when the disease is very prevalent a great deal of opportunity for independent exposure may be present in the neighborhood and wrongly charged to the child returned home from the hospital. It would be interesting to have the age distribution in the return cases. I wondered whether the high percentage of infecting cases in the first year might not be due to the close association of mother and baby, if the mother is the person who is most commonly infected. It is obvious, of course, that the number reported in this age group is too small for significant percentage computation.

DR. P. F. LUCCHESI, Philadelphia: In reference to infectiousness, was desquamation considered in these cases? Were the cases of reinfection considered in this group and how long after the reinfection did you quarantine the patients?

DR. J. E. GORDON, Detroit: Actual alteration of isolation under field conditions has been practiced in Detroit on the basis of differences among age groups. Adult patients are released after three weeks, and children after four. The frequency of infecting cases has been no greater than when all patients were released after isolation for four weeks. Investigations directed toward determining minimal isolation and quarantine requirements for scarlet fever are being conducted under the auspices of the Committee on Administrative Practice of the American Public Health Association. Information regarding unusual kinds of regulations is desired. We are particularly interested in unusual outbreaks of scarlet fever. Isolation and quarantine in significant geographic parts of the United States are being studied, that a general idea of the requirements for this disease may be determined. The age of contacts has been correlated with the number of secondary cases. The number of contacts probably immune has been determined by a history of previous scarlet fever and by Dick tests. Rhinitis was by far the most common element among patients having multiple complications. Exact data have been obtained of all combinations comprising this group included under multiple complications. I like Dr. Godfrey's statement in relation to the importance of rhinitis as an agent in transmitting scarlet fever. Clinically distinct differences among patients with rhinitis have been determined in relation to the likelihood of transmitting the disease. The two forms of rhinitis were distinguished on the basis of clinical studies and by bacteriologic methods. The coryzal form is regularly free from hemolytic streptococci and exhibited a distinct tendency epidemiologically toward ward and familial outbreaks. Desquamation has not been considered a pertinent factor in communicability.

Disease States Can Never Be Identical.—Just as no two human beings are precisely alike, not even twins from the same ovum, so two disease states can never be identical, even though they are produced by almost indistinguishable agents. Similarities do exist between disease states as well as between human beings. This is most noticeable in twins, quite common in families, not rare in communities, unusual between nations and most divergent in different races. A single anatomical feature, too, a peculiar mode of thought, a simple physiological process or an isolated pathological lesion may seem to be exactly the same in two different individuals; but each complete personality, each state of disease, is unique. When disease is regarded from this point of view, the slightest departure from the wholeness of health may produce a profound and lasting effect; for the significance of the injury may depend, not so much on its physical result, as on the interpretation that the patient gives it. —Longcope, W. T.: Methods and Medicine, *Bull. Johns Hopkins Hosp.* **50**:4 (Jan.) 1932.

SENSITIZATION DERMATOSES OF NONFUNGOUS NATURE

FOLLOWING SUPERFICIAL FUNGOUS INFECTIONS ("RINGWORM") OF THE EXTREMITIES *

CLEVELAND WHITE, M.D.
AND
SAMUEL J. TAUB, M.D.
CHICAGO

The recent original observations and investigations of Williams [1] in demonstrating that certain eruptions on the hands were a mycotoxic manifestation of distant active fungous foci has illuminated the mechanism of many heretofore etiologic puzzles. Williams called them dermatophytids, and numerous other subsequent publications have amply confirmed his original observations. One of us (C. W.) has recently observed a series of cases (eighteen) in which it appeared that an eruption of the glabrous skin of the body occurring either immediately or a short time after a flare up of fungous infection may occasionally be due to sensitization to substances other than circulating fungi or fungous toxins; the skin had apparently been rendered sensitive by the superficial fungous infection.

Williams was the first to advance the theory that hand lesions resulted from dissemination of fungi or their products from foci on the feet. Further investigations by Walthard,[2] Jadassohn [3] and Peck [4] have shown that (*a*) systematic cultures from the feet and hands were generally positive only from the feet; (*b*) the lesions on the hands generally appeared subsequent to those on the feet and sometimes followed irritation of the foci on the feet, and (*c*) the skin of patients with lesions of the feet and hands was practically always hypersensitive to intradermal injections of trichophytin. Sulzberger [5] felt after much observation and work that the probable mechanism, at least in a great many cases, was as follows: The fungi coming from the feet circulate in the blood and arrive in the allergic skin of the hands. Having arrived there, they are rapidly destroyed. It is for this reason that even after repeated careful searching, with the best possible technic, in almost all cases it is still impossible to find fungi in the hand lesions.

Although it has been demonstrated that superficial invading fungi can actually invade a lymph node and be grown in culture,[6] still one of us (C. W.) has never grown a positive blood culture for fungi after many attempts in some sixty cases. Peck was able to procure a positive blood culture in one case.

Infection of this nature on the hands has been classified into three groups:[7] (*a*) secondary to foot foci as originally described by Williams, (*b*) definitely

* From the Departments of Dermatology and Allergy, Northwestern University Medical School.
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* Read before the Section on Dermatology and Syphilology at the Eighty-Second Annual Session of the American Medical Association, Philadelphia, June 10, 1931.

1. Williams, C. M.: The Diagnosis of Some Eruptions on the Hands and Feet, Arch. Dermat. & Syph. **5**:161 (Feb.) 1922; Dermatophytid Complicating Dermatophytosis of the Glabrous Skin, ibid. **13**:661 (May) 1926; Dermatophytid Complicating Tinea Cruris, ibid. **22**:637 (Oct.) 1930.
2. Walthard, Bernhard: Dermat. Ztschr. **53**:692 (April) 1928.
3. Jadassohn, Werner; and Peck, S. M.: Arch. f. Dermat. u. Syph. **158**:16, 1929.
4. Peck, S. M.: Klin. Wchnschr. **29**:1357 (July 16) 1929.
5. Sulzberger, M. B.: Allergy in Infectious Diseases of the Skin, M. J. & Rec. **131**:264 (March 5) 1930.
6. White, Cleveland: Mycotic Inguinal Lymphadenitis Associated with Superficial Fungus Dermatitis of the Feet, Arch. Dermat. & Syph. **18**:271 (Aug.) 1928.
7. White, Cleveland: Superficial Fungus Infections of the Skin, M. Clin. North America **14**:1169 (March) 1931.

infected ones from fungi, possibly from foot foci by external circuits, or (*c*) primary hand infection with or without secondary foot involvement. A fourth group, we think, can now be added; viz., dermatitis due to some chemical or at least nonvital substance in conjunction with an active fungous infection, say on the feet. This possibility may explain the absence of fungi in some cases. This classification excludes the bacterial dermatoses which Mitchell [8] has described; and a recent case [9] studied apparently confirms these observations.

It is our aim in this paper to illustrate the basis for assuming this fourth group. This is a group in which, essentially, the fungus is only a predisposing factor, inducing what amounts to a hyperallergy. The following case reports are given to demonstrate specifically that the patients became sensitive to these substances only subsequent to the fungous attack; furthermore, that the fungous attack was unequivocally a new one (or had become decidedly active for the first time) and had not been obtained at previous dates when the patient had been subjected to these various substances. It is believed in these particular cases that the conditions in the patients were such that the symmetrical eruption on hands and the like would not have come out unless they had had elsewhere an active superficial fungous infection.

REPORT OF CASES

CASE 1.—*Original fungous infection on foot; sensitiveness to cottonseed oil.*

Mrs. H. R., aged 30, a housewife, admitted to the clinic, Oct. 17, 1928, had had an eruption on the right foot and on both hands for six years; the eruption appeared first on the plantar surface of the right foot and was considered a fungous infection. She said she had been treated by a dermatologist spasmodically for several months but had become unable to pay even moderate fees and was referred to the clinic. Dr. Stillians saw the patient several times and considered the eruption to be a ringworm infection. General physical examination was negative with the exception of a scar on the neck and large cryptic tonsils. The important item in her history was a thyroidectomy six years previous to admission.

The urine test was negative; the basal metabolic rate was within normal limits. Serologic examination of the blood was negative and the blood count was normal. Roentgen examinations of her teeth were negative.

When seen on June 6, 1929, she had an acute flare up on the hands and, because of the previous fungous infection, was restudied through the kindness of Dr. Stillians. At this time she had a typical clinical ringworm infection on the plantar surface of the right foot consisting of a group of deep seated vesicles. Hyphae were recovered by the usual potassium hydroxide digestion method; cultures were all negative. Blood cultures for fungi were negative during this and succeeding exacerbations. The eruption on the back of the fingers, hands and wrists was a diffuse erythematous one with considerable edema on the flexural surface of the arms and forearms but, curiously enough, did not fit in well with our numerous previous cases of either dermatophytids or actual fungous infections (e. g., with cryptococci in antecubital cases, as mentioned by Charles J. White and J. H. Swartz [10] in their comprehensive report, and by Cleveland White [11]).

Further inquiry revealed that the patient had embroidered with silk previous to this flare up, but testing with silk (contact and scratch methods) and a host of other possible substances (S. J. T.) was completely negative. Soothing applications soon produced a clinical cure of the forearms as it had done in previous attacks. It was still considered as a dermatophytid; nevertheless, additional tests were performed. Histamine tests in the circulatory clinic at Northwestern University by Dr. Géza de Takáts were negative and a repetition of the basal metabolism test again gave figures within normal limits.

The patient was seen several times within the next year with an occasional mild relapse of ringworm of the foot and flare up on the flexures of the arms and on the fingers from time to time. In the fall of 1930 she appeared with an acute erythematous flare up on the hands and arms as previously described and also on the sides of the neck and legs. This time, however, there was no discoverable activity on the feet; we felt that this practically eliminated its being primarily a dermatophytid and that it must be a sensitization eruption. A large series of tests was now performed with cottonseed oil strongly positive. All other substances were negative.

Thereafter, the patient's regular diet was maintained with the exception of all articles containing cottonseed oil. Further questioning revealed that, as far as she could remember, she had placed cottonseed oil in cake before each attack. (It had been eaten many times before the original ringworm eruption and had produced no disturbance.)

Elimination of the cottonseed oil has produced a clinical cure, and she has been followed closely to date. Fungicidal preparations are used occasionally on the feet as a prophylactic measure; clinically and microscopically the fungous infection has completely disappeared.

CASE 2.—*Ringworm of the finger and nail; sensitiveness to oatmeal.*

A school girl, aged 12, had had a fungous infection of the right index finger for several weeks, with many small thick roofed vesicles on the sides of the fingers. Hyphae were found on potassium hydroxide preparation, and eventually, on culture, *Trichophyton interdigitale* was grown. The condition on the finger was somewhat slow in responding to therapy but at the end of six weeks was practically healed. While the same preparations were being used, a discrete patchy erythematosquamous eruption appeared on all extremities.

Because of previous experience in this type of case, a sensitizations factor other than fungus was suspected. Examination of the secondarily affected areas resulted negatively for fungi; a blood culture was not taken because the patient objected.

Inquiry into the diet disclosed that she had begun to eat oatmeal the past few days (fall of the year) and that she had eaten oatmeal every winter for many years. Elimination of oatmeal from the diet produced a clinical cure. The fungous infection completely healed after several more weeks of treatment.

CASE 3.—*Fungous infection of foot; sensitiveness to buckwheat.*

A woman, aged 21, a college student, had had ringworm of the toes and plantar surface of her left foot for several months. When first observed, the patient said the condition was considerably better and improving, but she wanted advice as to a symmetrical patchy eczematous eruption on the back of her hands, forearms and thighs.

A few hyphae were found from the foot after considerable search; cultures were negative. As the fungous infection was undoubtedly improving and the secondary eruption of only a few days' standing, it was felt that the latter was due to some other cause.

Skin tests of many substances showed only buckwheat to be strongly positive. Further questioning revealed that she had started eating buckwheat cakes just previous to the last eruption. She had eaten them in other years with impunity.

CASE 4.—*Original infection on scalp; sensitiveness to silk.*

A high school girl, aged 15, had had an eruption on her face for one year and, according to her history, had received a great many roentgen treatments in that time. When first observed, the face was erythematous and edematous; the itching and burning was most intense. The scalp had many

8. Mitchell, J. H.: Amycotic Dermatoses Simulating Ringworm and Erosio Interdigitalis Blastomycetica, Arch. Dermat. & Syph. **19:** 659 (April) 1929.

9. White, Cleveland: Superficial Bacterial Infection of the Hand, Simulating Epidermomycosis, Arch. Dermat. & Syph. **23:** 371 (Feb.) 1931.

10. White, C. J., and Swartz, J. H.: Cryptococcosis Epidermica, Arch. Dermat. & Syph. **18:** 692 (Nov.) 1928.

11. White, Cleveland: Superficial Yeast Infections of the Glabrous Skin, New York State J. Med. **27:** 1116 (Oct. 15) 1927; Further Clinical and Experimental Studies, Arch. Dermat. & Syph. **18:** 429 (Sept.) 1928.

patchy, dry, scaling areas, fitting into the clinical diagnosis of seborrheic dermatitis.

The important observations in her history were that there were marked exacerbations on her face especially after attending dances, and that for a month previous to the onset of the face involvement she had had scaling areas in the scalp.

Skin tests were at once performed and she was found strongly sensitive to silk. Discontinuation of wearing silk and then desensitizing with silk has produced a clinical cure, combined with treatment to the scalp. Cultures from the scalp scales yielded *Monilia;* fungicidal therapy has clinically cleared that area.

Although various fungi and bacteria are believed to cause scaling dermatoses in the scalp, and although there are some who do not believe in the infectious origin of many cases of so-called seborrheic dermatitis, we felt justified in calling the scalp manifestation a superficial fungous infection. With extension to the face and eyelids and other structures, the skin there became sensitive to silk. At least, the findings, observations and therapeutic response would indicate such a possible theory. This case was cited because of its close association with other superficial fungous infections besides on the extremities, where the first observations were made.

In other cases, tomato was found as the offending substance in two, milk in one and chocolate in another. In several cases, multiple sensitization was elucidated.

TECHNIC OF SKIN TESTING

It is now generally conceded that many diseases are caused by sensitization to some protein, either epidermal, furs, food, pollen, bacteria or a miscellaneous group, such as orris root, pyrethrum, silk, kapok and cotton. We know that sensitization to one or more of these proteins may cause asthma, hay-fever, urticaria, eczema, angioneurotic edema, migraine and colitis. This sensitization or hypersensitiveness is determined by simple and painless skin tests.

There are four methods in use for performing these tests. First, the cutaneous or scratch test, which consists of making small linear cuts into the epidermis about one-eighth inch long and one inch apart, care being taken not to cut deep enough to draw blood. The forearms are usually selected for the scratches, but the back and thighs may also be used. A Graefe eye knife or any dull scalpel or even a large needle can be used to make the scratches. A small amount of the powdered protein is then placed on each scratch with the flat end of a tooth pick and a drop of tenth-normal sodium hydroxide is placed on the protein and rubbed in with the sharp end of a tooth pick. It is allowed to dry and after twenty minutes is wiped off with water and the reactions are read.

The second method is the intracutaneous or intradermal test, which is done by the injection of 0.05 cc. of the dissolved protein into the skin, raising a small wheal. This method is used when the scratch tests are all negative and in patients suspected of pollen, dust, animal emanations and other miscellaneous sensitizations. Fatal results occasionally occur with the intradermal tests, especially in patients with asthma or hay-fever who are extremely sensitive, or severe systemic reactions may occur. Therefore, it is not wise to use this method as a routine measure.

A third method which can be used to determine hypersensitivity is that of the passive transfer technic; blood is withdrawn from the patient and centrifugated at high speed. The serum is injected intradermally in a nonsensitive individual and skin tests are made over these areas. A positive test consists of an urticarial wheal, or, at times, an erythema occurring usually within five to thirty minutes. Delayed reactions may occur from eight to twelve hours later, particularly in food hypersensitiveness. About 200 of these proteins, exclusive of pollens, are available for testing each case of allergic disease.

A fourth method, the so-called patch test, is now being used with considerable help in discovering the cause of some obscure cases of dermatitis venenata. The method is extremely well illustrated in a recent paper by Sulzberger and Wise.[12] These various methods are detailed in a preliminary way on account of the application they may have in our problems in dermatophytosis.

SPECIAL ALLERGIC PHASES

1. *"Multiple" Sensitization.*—In a previous communication, one of us [13] reported an asthma caused by canary feather protein and an eczema caused by silk [14] in one and the same patient. Incidentally, such cases emphasize the importance of making a sufficiently varied set of tests on each patient and of not being content with the more common substances. This is called multiple sensitization; i. e., sensitization to any two or more *unrelated* substances.[15] This is different from "group" sensitization. Thus, patients who react to timothy pollen [16] usually react to other members of the *Gramineae* group, as red top grass, June grass and orchard grass. Likewise, patients reacting to the pollen of ragweed will usually also react to other members of the compositae, such as giant ragweed, sunflower and cocklebur. Brown [17] has named these "group reactions"; they are due to a similarity in the structure of the protein molecule.

2. *Balanced Allergy.*—There is yet another phase of allergy that may enter into the "dermatophytid" problem. A person may be sensitive to some protein, such as a food with which he comes in frequent contact, and yet remain free from symptoms. Peshkin and Rost [18] and Rackemann [19] have found that about 10 per cent of children without symptoms of allergy are sensitive to one protein or another. They are allergic but are held in equilibrium; the terminology "balanced allergic state" has been advanced by Vaughn.[20] In it tissues are able to handle a given amount of the allergen without upsetting the allergic balance; desensitization from eating small amounts of the allergen may be a factor in deferring symptoms. An overdose, now, of the allergen will upset the equilibrium with an onset of symptoms. One may be sensitive to two proteins, maintaining allergic balance while the contact is with only one but developing symptoms on exposure to both (summation effect). Hay-fever, asthma, urticaria and dermatitis subjects frequently show multiple sensitiveness.

COMMENT

The suggestive causative rôle of the original fungous infection in the genesis of a secondary sensitization phase has become easier to recognize as more cases have been observed and analyzed. It is readily admitted that there are a great many cases of "ringworm" of the

12. Sulzberger, M. B., and Wise, Fred: The Contact or Patch Test in Dermatology, Arch. Dermat. & Syph. **23:** 519 (March) 1931.
13. Taub, S. J.: Some Unusual Cases of Protein Sensitization, Illinois M. J. **53:** 272 (April) 1928.
14. Taub, S. J.: Allergy Due to Silk, J. Allergy **1:** 539 (Sept.) 1930.
15. Taub, S. J.: Multiple Sensitization in Allergic Diseases, Illinois M. J. **57:** 287 (April) 1930; The Diagnosis and Treatment of the Allergic Diseases, M. Clin. North America **14:** 1303 (March) 1931.
16. Taub, S. J., and White, Cleveland: Urticaria Due to Grass Pollen, J. Allergy, April, 1931.
17. Brown, G. T.: Multiple Sensitization in Bronchial Asthma, Report of Cases, Ann. Clin. Med. **5:** 893 (March) 1927.
18. Peshkin, M. M., and Rost, W. L.: Incidence of Protein Sensitization in Normal Child, Am. J. Dis. Child. **23:** 51 (Jan.) 1922.
19. Rackemann, G. M.: Am. J. M. Sc. **163:** 87 (Jan.) 1922.
20. Vaughn, Warren: Pollinosis: Constitutional and Focal Factors, Arch. Int. Med. **40:** 386 (Sept.) 1927.

hands and feet; only a few are accompanied or followed by a symmetrical eruption produced, fortuitously, by an extraneous substance. However, the same may be said of dermatophytid; only a few of the bona fide superficial fungous infections are accompanied by what are commonly accepted as dermatophytids. And, of course, from the opposite angle many cases of eczematoid dermatitis of the hands have been found sensitive to many substances in which there was no evidence of a previous active fungous infection.

In discussing the mosaic fungus, Williams [21] summarized quite succinctly the present status of toxic manifestations of superficial fungous infections. In part, he states that a dermatophytid is explained as the reaction of a sensitized skin either to organisms or to their toxins: the sine qua non in this explanation is the assumption of a preliminary sensitization of the skin. Further, he states that other facts point to the altered reaction of the skin as one of the most important factors in this disease. In many typical cases, a large proportion of the lesions on the feet contain the organism in scanty numbers or not at all, while in severe cases the finding of the organism is often excessively difficult or impossible. Some of the severe cases are accompanied, at or near the site of the original infection, by a severe but superficial dermatitis, which is usually sterile. The altered reaction of the skin, therefore, expresses itself in two ways: first, by hypersensitiveness to the poison of the disease and a variety of types of inflammatory response and, second, by a more or less complete destruction of the organism. Going further, Williams mentions the possibility that allergy in tinea may not be transient and may not disappear when the supply of toxin ceases, and that the reaction of the skin to external irritants may be permanently altered. All in all, he feels that the work of recent investigators has thrown considerable light on the problem; but much remains to be done. In theorizing the possibilities here, Sulzberger and Lewis's [22] observations are decidedly instructive and subjective. They say:

> The fact seems established that products of fungi are capable of causing an eczematous eruption in a hypersensitive skin. This seems important not only for the understanding of the pathogenesis of dermatophytids of the hands but also because it demonstrates that the products of other microorganisms may be capable of producing eczematous eruptions in hypersensitive persons.

All the foregoing points bring up a most probable clinical occurrence; viz., that in some people who have fungous infections the skin is so altered that it becomes sensitive to certain foods, external irritants, and the like, to which no previous clinical manifestations had ever occurred. In the light of our observations and excellent therapeutic responses when both phases are recognized, we believe this to occur definitely. Hence it is believed that an infection of the skin due to living organisms may likewise render the person hypersensitive to substances emanating from things inanimate as well as animate.

Apparent cure or a marked improvement of the fungous infections did not eradicate the secondary eruption, while removal of the incriminating substance from the diet or removal of the irritant was of distinct help, and in practically all produced a clinical cure.

Trichophytin was used in only one patient of this group; it produced such a marked aggravation of the ringworm infection that it was not felt justifiable to use it further. A statement of Sulzberger and Kerr [23] in this respect is significant. They state that "for a procedure (i. e., testing to trichophytin) which gives a large number of positives in apparently normal individuals cannot bear much weight in diagnosis; this has naturally led to a diminished belief in the diagnostic value of trichophytin in the United States." Its value, therefore, at present, in testing these sensitization dermatoses would be quite limited if of any value. Furthermore, in testing several patients in another line of research who at the time had undoubted ringworm of the feet, it was entirely negative (C. W.).

The discussion of the fundamental principles of allergy will not be undertaken here. The original meaning of Pirquet and Schick in 1906 may be recalled; viz., "A change occurring in an organism after contact with a living or inanimate organic 'poison' and manifesting itself in an altered reaction to a second application of the same substance (or closely related)." Various terms are used by various experts, which has led to considerable confusion. The term "sensitization" is used for want of a better one.

The skin tests must be properly executed and properly interpreted. If so, then the cause of the secondary eruption is quite simplified. Ramirez and Eller [24] state the situation quite tersely in saying that "sensitization tests are a distinct aid in the diagnosis of dermatoses if carefully performed and interpreted." In some instances one can detect the causative substance without the necessity of sensitization tests. Especial study in each of the observed patients in this group was made to determine that the sensitization occurred only after the preceding fungous activity. Thus it is felt that in these patients the active fungous infection had definitely sensitized them to the various extraneous substances.

CONCLUSIONS

Superficial fungous infections (ringworm) of the extremities and elsewhere may be followed by secondary sensitization dermatoses of nonfungous nature.

Such dermatoses may be confused with dermatophytid eruptions; future studies may show that some may be a part of a dermatophytid as at present conceived.

Detailed individual study and properly performed sensitization skin tests usually will discover the offending substances.

Four illustrative cases are cited; an insufficient number of cases has been studied to incriminate any specific organism or any particular class of proteins or substances.

104 South Michigan Avenue—55 East Washington Street.

ABSTRACT OF DISCUSSION

DR. ALBERT STRICKLER, Philadelphia: I am impressed with the tremendous importance of the question of hypersensibility. It has not been many years since the question of hypersensibility was limited to the problem of drugs. The second step in the advance was the relationship of poison ivy, and the work of Bloch, and then this problem—important because of its wide spread—the trichophyton fungus infection. Dermatologists are faced with a peculiar problem, because there are many condi-

21. Williams, C. M.: Keratolysis and the Mosaic Fungus, Arch. Dermat. & Syph. **23**: 733 (April) 1931.

22. Sulzberger, M. B., and Lewis, G. M.: Trichophytin Hypersensitiveness Demonstrated by Contact Tests, Arch. Dermat. & Syph. **22**: 410 (Sept.) 1930.

23. Sulzberger, M. B., and Kerr, P. S.: Trichophytin Hypersensitiveness of Urticarial Type, with Circulating Antibodies and Passive Transference, J. Allergy **2**: 11 (Nov.) 1930.

24. Ramirez, M. A., and Eller, J. J.: Intradermal, Scratch, Indirect and Contact Tests in Dermatology, J. A. M. A. **95**: 1080 (Oct. 11) 1930.

tions on the skin, particularly on the hands, the etiology of which seems to be more or less uncertain, in the sense that no definite test is available which will determine whether the lesion is due to a trichophyton infection, whether the condition is one of mild or severe hypersensitiveness, or whether a trauma of some kind produced the skin lesion on the hand. At the Skin and Cancer Hospital we have attempted in the last several months to carry out several cutaneous tests with trichophytin. Unfortunately, perhaps because of experimental error, many were positive, so many that we could not believe our results. An important thing to keep in mind is the peculiar idiosyncrasy of the skin. Second, what are the drugs which the patient has either applied locally or taken internally? Third, what is the method by which a reaction on the skin may be obtained which will give a true etiologic index? The question of hypersensibility, and the question of finding a reliable cutaneous test for these trichophyton infections, present the important elements for consideration.

DR. JOSEPH MULLER, Worcester, Mass.: I was impressed by this paper, as I am working on allergy in general and have found several cases in which the patient did not react under one particular allergy but had a combined allergy. It was necessary to have two allergins present to get the allergic reaction. In one case, an allergic eczema in a girl, aged 12, the combination of potatoes and wheat was the cause of the disorder. Removal of either one from her diet for a prolonged period produced cure. A woman had urticaria from eating strawberries on some occasions but not always. I could not correlate it. After some time I got a calender which she kept on her menstrual periods and found that she was susceptible to strawberries only during the first two days of menstruation. Another case was that of a woman who had urticaria after eating five different foods and who promptly lost that allergic state after removal of her teeth. This case seemed to me parallel to the case reported by Drs. White and Taub in which trichophytin injection caused an eruption, combined with food or other materials.

DR. S. W. BECKER, Chicago: The authors have presented an excellent cross-section of the population in a large city, and I wish to present a more intensive study of a selected group of children. The University of Chicago has a small private school for pupils corresponding in age to those in public schools. Great care is observed with regard to children taking athletics and entering the swimming pool. Any child who has a maceration between the toes or an exfoliation between the toes is excluded. The parents commonly bring the children to us for an evaluation of the condition, and they are generally considerably perturbed. We have no Negroes, but children from the higher strata of society, and pediatricians state that we have children with what Tilbury Fox has termed dyshidrosis. These children are more prone to develop verrucous conditions. We have examined them repeatedly by potassium hydroxide and other methods and have found no fungus. We are inclined to believe that the diagnosis of fungus infection is extremely difficult, and the paper of Drs. White and Taub confirms this. Patients who are hypersensitive and develop a dermatitis have been found to be seven times as sensitive to fungi as normal individuals. We know that during their eruption they are many times more sensitive, so we would expect them to develop a dermatitis of the type the authors describe.

DR. SAMUEL M. PECK, New York: I have been attempting to desensitize a series of patients. About twenty-four patients did not have dermatophytosis, so far as I could judge. My idea was that, given a case of trichophytin sensitivity, in order to treat trichophytosis with trichophytins the sine qua non was sensitization. Therefore, as a matter of choice I took patients who had not had trichophytosis, with the same idea as the treatment of hay fever in the preseasonal period, for I knew I was giving a certain amount of trichophytin, and therefore was using a logical amount of therapy. In the patients with a trichophytosis I got a desensitization, but they did not react to injections of Zurich trichophytin. These patients have returned in the last month with what I judge to be recurrence and now tests for the trichophyton are positive.

DR. MARION B. SULZBERGER, New York: The conclusions which I wish to reach concerning trichophytin desensitization are the following: It is not efficacious in the majority of cases with the technic now used, but it is sufficiently encouraging in the few cases I have witnessed to recommend it for use in epidermophytids that have proved recalcitrant to other therapy. In addition to this, I should like to try variations of administration, such as intravenous or subcutaneous injections. Concerning prophylaxis, it is impossible to think that one can achieve this by disinfecting clothes or floors or anything of the sort. Almost all have had and have tinea infections. Every one carries the fungi continually, whether walking on infected floors or disinfected floors, in sterile slippers or slipperless. One factor that reduces resistance to these germs is maceration. Hence the occurrence of manifest lesions after gymnasium work, swimming pools or golf, and after nervousness and its accompanying hyperhidrosis. In some cases the best hope for combating these outbreaks is by influencing the immunity, and one way of influencing this immunity is through trichophytin injections.

DR. CLEVELAND J. WHITE, Chicago: The clinical observation that one dermatitis may predispose a patient to another has been made by experienced dermatologists. Dr. Becker reported his observation that persons with a dermatitis venenata are more sensitive, especially during the duration of the dermatitis. It was the aim in this paper to try to prove definitely that such events do actually occur after the skin has been rendered allergic by an active ringworm infection, and a sensitization dermatitis due to an inanimate substance occurred. In an occasional case, even after both phases are recognized, local treatment is necessary in the secondary eczematoid areas because of irritation and possibly bacterial invasion.

THREE FATAL CASES OF BACILLUS PYOCYANEUS INFECTION *

B. S. KLINE, M.D.
AND
A. S. MASCHKE, M.D.
CLEVELAND

Three fatal cases of Bacillus pyocyaneus infection observed at Mount Sinai Hospital of Cleveland presented characteristic features, including gangrenous and less severe lesions of the skin, most advanced in the anal, rectal or genital areas; general intoxication with profound prostration and, at autopsy, hemorrhagic and necrotic lesions in the skin and viscera, associated with massive local bacterial colonization. One of these cases, which presented agranulocytosis, terminated eighteen days after the onset of symptoms in a previously healthy child.

B. pyocyaneus infection, although not of common occurrence, is perhaps less rare than is generally supposed. Clinically it may be confused with a number of skin diseases, including pellagra and lupus erythematosus disseminatus. It must be differentiated from aleukemic leukemia, the purpuras and other diseases. Some progress toward specific therapy has been reported by Wassermann,[1] and it is possible that further studies will reveal methods of preparing potent bactericidal and antitoxic serums.

Bacillus pyocyaneus was obtained by Gessard,[2] in 1882, in pure culture from two cases of skin wounds showing bluish green discoloration. Not long thereafter the organism was found, by numerous investigators, in colored suppurations in various portions of the body. Among the first reports was that of Gruber[3]

* From the Laboratory and Medical Departments, Mount Sinai Hospital.

1. Wassermann, August: Experimentelle Untersuchungen über einige theoretische Punkte der Immunitätslehre, Ztschr. f. Hyg. u. Infectionskrankh. **22**: 263, 1896.
2. Gessard, Carle: La pyocyanine, Thèse de Paris, 1882.
3. Gruber, J.: Ueber das vorkommen grünen Eiters in Ohre, Monatschr. f. Ohrenh. **21**: 145; 178, 1887.

in 1887, who recovered Bacillus pyocyaneus from green suppurations of the ear.

By 1897 the organism had been repeatedly found not only in various local processes throughout the body but also in general infections with severe constitutional symptoms, as reported by Barker.[4] This observer also noted the occurrence of Bacillus pyocyaneus in gangrenous lesions of the skin, as did Hitschmann and Kreibich [5] shortly thereafter in similar cases of ecthyma gangrenosum.

A good review of the literature to 1908 concerning the pathogenicity for man of Bacillus pyocyaneus is given by Waite.[6]

A more comprehensive review of the literature to 1926, including the biology and pathogenicity of the organism, is presented by Lode.[7]

The few reports since 1926 concerning Bacillus pyocyaneus infection in man add nothing to the classic description of the disease by Eugen Fraenkel [8] in 1917.

REPORT OF CASES

CASE 1.—*History.*—E. O., a white woman, aged 39, admitted to the hospital, Aug. 8, 1923, complained of redness of the cheeks with itching, which had started seven weeks previously. She had suffered from asthenia and from transient pain in many joints for about two years. About seven weeks previously a rash appeared on her cheeks, which rapidly spread and involved almost the entire face down to the neck and chest. The eyelids and lips became swollen and the mouth sore. She had marked lassitude, asthenia and anorexia.

Physical Examination.—The patient was well developed and well nourished; the temperature and pulse were normal. The lesion on the face, involving both cheeks and the bridge of the nose, was indurated and purplish, and had a sharp line of demarcation, resembling closely the butterfly form of lupus erythematosus. There was, however, marked puffiness of the eyes and marked swelling of the lips. The mucous membrane of the mouth showed white patches on the lips and the gums; there was a deeper ulcer underneath the tongue; the uvula showed superficial ulcerations.

On the extensor surfaces of the forearms and the elbows there were small circular purplish papular areas, indurated, having a somewhat indolent appearance similar to the lesions on the face and neck. In the anogenital region there was an extensive superficial ulcerative lesion, moist and covered with a whitish exudate.

About fourteen days after the patient's admission a cough and dyspnea developed, and the temperature rose abruptly to 103 F. At this time physical examination showed dulness at both bases with many râles and other signs of consolidation. Death occurred, August 25, seventeen days after admission. Laboratory examinations showed a slight secondary anemia and, almost consistently, a leukopenia, the white cells varying from 7,000 down to 2,000, with a normal differential count. The urine was normal. Blood cultures were negative. Stools were negative for ova and parasites.

The clinical diagnosis vacillated between lupus erythematosus disseminatus and pellagra. The latter diagnosis was considered because of the previous history of asthenia, the depressed state of the individual, and the presence of indolent, rather symmetrical lesions, appearing for the most part on regions of the skin not covered by clothing. The patient's diet, however, except for the fact that she ate meat two or three times a week only, had been fairly well balanced, containing plenty of eggs, butter fat and fresh vegetables.

Autopsy.—Autopsy thirteen hours after death showed: Bacillus pyocyaneus infection with early gangrenous inflammation in the anovulvar region; multiple erythematous and maculopapular disseminated skin lesions (gram-negative bacilli in lesions); focal erythematous lesions in the oral cavity, larynx, esophagus, stomach and intestine; small ulcers of the lips, buccal mucosa and lower esophagus (gram-negative bacilli in lesions); coalescing lobular pneumonia (B. pyocyaneus was recovered from the pneumonic lung); old and fairly recent tuberculous inflammation of the peribronchial lymph nodes.

The body was that of a well developed, well nourished white woman. The skin showed lesions, as described. On section of the lungs, both upper lobes and the left lower lobe showed grayish areas of coalescing lobular consolidation. Mucosa of the upper anterior surface of the tongue, in an area about 2 cm. in diameter, showed considerable injection. In the posterior portion there was a punctate hemorrhage about 2 mm. in diameter in the mucosa. On the edge of each true vocal cord the larynx showed a small area of injection and possible infiltration several millimeters in large diameter.

Examination of the lower two thirds of the esophagus presented a striking picture. There were about a dozen circumscribed, finely injected areas, ranging from 2 mm. to 1 cm. in diameter. The injection in the majority of the lesions was concentric. Some of the areas showed grayish infiltration of the mucosa. Some showed definite central superficial ulceration. A few showed yellowish flecks at the edge of the ulcerated portions. Throughout the small intestine there were a number of areas of intense patchy injection of mucosa. The rectum showed fairly numerous areas of injection and some hemorrhage. In places the circumscribed injected areas resembled those in the esophagus.

Cultures from the consolidated lung yielded abundant growth of Bacillus pyocyaneus.

Under microscopic examination the following conditions were revealed: The skin of the vulvo-anal region showed areas of necrosis of the surface epithelium with chronic granulation tissue in the base. The skin of the foot showed numerous engorged capillaries in the upper layer of the corium, and a number with hyaline thrombi in the lumen (regional hemorrhages). Associated with these lesions, the granular cells in the rete were swollen and the cytoplasm was vacuolated. In several places there were vesicles within the rete. Sections of the lung showed a striking picture of apparently necrotizing bronchopneumonia. The necrosis affected the exudate and the walls and was observed in places involving smaller bronchial branches and their contained exudate. The esophagus showed an area of erosion several millimeters in extent, with chronic granulation tissue in the base. Throughout the section the blood vessels were engorged. Section of the rectum showed an area of ulceration at the mucocutaneous border, several millimeters in diameter, with chronic granulation tissue in the base.

In early and moderately advanced lesions of the skin, lung and alimentary canal, sections stained by the Gram method showed clumps of large gram-negative bacilli.

CASE 2.—*History.*—F. E. D., a well developed, well nourished white man, aged 58, came to the hospital, Jan. 30, 1924, with the complaint of enuresis and frequency for the past two years. He had had night frequency for many years and for the past two years enuresis; he had been catheterized twice a day for the past two months.

Except for the urinary tract, his physical examination on admission gave negative results. The prostate on rectal palpation was large but not nodular. The urine was alkaline and contained many clumps of pus cells and epithelial cells. Chemical analysis of the blood and the phenolsulphonphthalein test gave negative results. Two weeks after admission he had a chill and his temperature went to 104 F.

The white cell count rose following the first chill to 41,000, with a normal differential count, and the nonprotein nitrogen went from 27 to 141 mg., with a corresponding increase in the various nitrogenous metabolites and dextrose; the phenolsulphonphthalein return fell to 15 per cent in three hours. Blood cultures were negative.

The patient was acutely sick, had numerous severe chills, and, despite transfusions, intravenous injections of mercurochrome-

4. Barker, L. F.: The Clinical Symptoms, Bacteriologic Findings and Postmortem Appearances in Cases of Infection of Human Beings with the Bacillus Pyocyaneus, J. A. M. A. **29**: 213 (July 31) 1897.

5. Hitschmann, Fritz; and Kreibich, Karl: Zur Pathogenese des Bacillus pyocyaneus und zur Aetiologie des Ekthyma gangraenosum, Wien. klin. Wchnschr. **10**: 1093 (Dec.) 1897.

6. Waite, H. H.: A Contribution to the Study of Pyocyaneus Infections, with a Report of Two Rare Cases, J. Infect. Dis. **5**: 542, 1908.

7. Lode, A.: Bacillus Pyocyaneus, Handbuch der Pathogenen Mikroorganismen, Jena, G. Fischer **6**: 149, 1929.

8. Fraenkel, Eugen: Weitere Untersuchungen über die Menschenpathogenität des Bacillus pyocyaneus, Ztschr. f. Hyg. u. Infectionskr. **84**: 369, 1917.

220 soluble and supportive measures, he died, February 29, thirty days after admission.

Clinical diagnosis was hypertrophy of the prostate, atony of the bladder, cystitis and acute ascending pyelonephritis.

Autopsy.—Autopsy six hours after death showed: chronic prostatitis with enlarged median bar; dilatation and hypertrophy of the bladder; acute cystitis; ureteritis; bilateral suppurative pyelonephritis (Bacillus pyocyaneus and Staphylococcus aureus in the latter lesion); Bacillus pyocyaneus septicemia; gangrenous colitis and bronchopneumonia (Staphylococcus aureus also in the latter lesion).

The body was that of an anemic looking slightly emaciated tall old white man. In the right and left upper lobes of the lungs there were a number of dry granular grayish consolidated patches varying in size up to a centimeter in diameter.

The kidneys together weighed 550 Gm. The surface of each presented a striking picture with innumerable opaque yellow areas, from 1 to 3 mm. in diameter, slightly elevated above the general level. There was marked opaque yellow infiltration in places throughout the kidney substance. The mucosa of the ureters showed some injection. In the lumen there was abundant pus. The bladder contained a few hundred cubic centimeters of turbid urine. The walls were greatly thickened, averaging 1 cm. The mucosa was strikingly trabeculated and showed considerable injection, some areas of hemorrhage and apparently some infiltration of the mucosa. At the neck of the bladder there were two spherical masses of firm yellowish white tissue, apparently the median bar of the prostate, each 1.5 cm. in diameter, elevating the regional, considerably injected vesical mucosa and in addition obstructing the orifice. Each lateral lobe of the prostate was somewhat larger than the average. The consistency was somewhat increased. On section, some scarring of each lobe was seen. A few small spherical yellowish white nodules were present on each side.

Beginning in the cecum and continuing to the anal ring, especially marked in the rectum, there were areas of yellowish brown infiltration of the mucosa especially marked along the folds of the large intestine, with extensive ulceration in the sigmoid colon and the rectum. The odor was offensive.

Culture of the blood showed abundant growth of Bacillus pyocyaneus, and kidney culture showed Bacillus pyocyaneus and Staphylococcus aureus.

Fig. 1 (case 3).—Low power magnification showing gangrenous necrosis in primary lesion of anal region.

Under microscopic examination the following conditions were noted: Section of the lung showed typical necrotizing pneumonia. Section of the kidney showed intense infiltration by pus cells in all portions, with numerous abscesses varying in size up to 3 mm.

The colon presented a striking picture of necrosis of the mucosa and submucosa with intense pus cell infiltration, abundant fibrin deposit and thrombosed blood vessels.

The following observations were made on sections stained by the Gram method: Numerous large and small clusters of typical gram-positive staphylococci were seen in the lung. In certain necrotizing areas especially involving blood vessels there were many slender gram-negative bacilli.

In a gangrenous lesion in the colon there were innumerable slender gram-negative bacilli.

Fig. 2 (case 3).—High power magnification of lesion shown in figure 1. Note the massive colonization of Bacillus pyocyaneus with gangrenous necrosis.

In portions of a section of the kidney there were numerous slender gram-negative bacilli, especially in the interstitial tissue and in the walls of blood vessels. There were numerous gram-positive cocci in clusters in many areas of suppuration.

CASE 3.—*History.*—W. G., a white boy, aged 7 years, admitted to the hospital, Sept. 21, 1928, complained of a high fever and of pain in the rectum of two days' duration. The family history was negative and, except for a history of an abscess under the arm one year previously and another near the rectum two years previously, the past history of the patient was essentially irrelevant.

Physical Examination.—The child was well developed but slightly undernourished, with a hot, dry, pallid skin; the temperature was 104 F. The lungs were normal and the heart showed a slight bulkiness of the left ventricle on fluoroscopy. The spleen was palpable two fingerbreadths below the costal margin, and the liver was also palpable but not tender. The patient complained of extreme pain in the perineum, and there was very marked tenderness in that region. However, no swelling was palpated. Numerous hemorrhages were found in both retinas. The red blood count was 2,000,000; the hemoglobin, 55 per cent; platelets, 55,000; the white blood count 3,200, with 40 per cent granulocytes. Bleeding time and clotting time were normal. Urinalysis and the intracutaneous tuberculin test both gave negative results. Cultures from the stool yielded an abundant growth of Bacillus pyocyaneus.

Course.—The patient's condition became gradually worse, the temperature remaining at a very high level; the pulse became more rapid, and the prostration increased. A few days after admission, a few purpuric spots appeared over the abdomen and the lower extremities. A faint systolic murmur was heard over the precordium and a slight to and fro friction rub in the third interspace to the left of the sternum.

Six days after admission, blood culture showed an abundant growth of Bacillus pyocyaneus. The white blood cells diminished in number to 1,150 and the granulocytes fell to 5 per cent. The blood platelets dropped to 14,400 and the red blood cells to 1,600,000. Transfusions were given twice with no apparent improvement. The next day a deep mass was palpated in the left ischiorectal area, bulging into the rectum. In a day or two the skin of this region became gangrenous, and an incision and

drainage were done. The child became comatose, and a gangrenous sloughing area developed in the region of the first lower left molar, where a tooth had been extracted; physical signs of bronchopneumonia appeared over both bases and the patient died, October 6, sixteen days after admission to the hospital. The impression on admission was that the case was one of aleukemic leukemia, but after the positive blood culture a diagnosis was made of Bacillus pyocyaneus septicemia, gangrenous inflammation of the muscles of the left buttock, thrombocytopenia and agranulocytosis.

Autopsy.—Autopsy, performed by Dr. A. M. Young, fifteen and one-half hours after death showed: anorectal gangrene (B. pyocyaneus); gangrene of the muscles of the left buttock (B. pyocyaneus); B. pyocyaneus septicemia with focal necrotizing pneumonia; focal necrosis of the appendix; multiple hemorrhagic necroses, especially of the serous membranes.

There were a number of areas of bluish red discoloration beneath the skin of the trunk and extremities in places, apparently subcutaneous hemorrhages. There was considerable bluish red discoloration about the anus; there were also a number of large blebs containing reddish fluid.

When the abdomen was opened many punctate hemorrhages, ranging from 1 to 4 mm. in diameter were noted, scattered everywhere over the peritoneal surfaces. Numerous hemorrhages were disclosed in the pleura and in the diaphragm when the thorax was opened. Firm nodules were felt on palpation in all lobes of the lungs. On cutting down, these areas were found to be dark red with a central gray area. These areas, approximately 1 cm. in diameter, were roughly spherical. In the left upper lobe, on section there were several small, gray, somewhat translucent nodules, each about 6 mm. in large diameter, with an almost cartilaginous consistency. Section of the appendix showed grayish green mucosa, with a small defect in one area, approximately 1 mm. in diameter, covered by yellow friable material.

Near the region of the anus the colon showed marked edema, greenish discoloration of the mucosa and, in one area, ulceration of the mucosa with defect formation. The defect was covered by yellow friable material. Serosa of the alimentary canal throughout showed numerous areas of hemorrhage.

Fig. 3 (case 3).—Low power magnification of the lung. Note the fully developed embolic lesion with central necrosis and peripheral hemorrhage.

The muscles on the left side of the pelvis were swollen, reddish brown, much more friable than those on the right, and had a penetratingly foul odor. There was a surgical incision in the left buttock near the anal orifice, which communicated with the gangrenous muscles of the left buttock.

Smears from the necrotic lesion of the buttock showed innumerable gram-negative bacilli; small gram-positive chain forming cocci; larger gram-positive cocci, some of which were paired, and some fusiform bacilli.

Culture yielded an abundant growth of B. pyocyaneus, B. coli and a gram-positive bacillus; also a rounded chain-forming, small gram-positive coccus in broth.

Culture of the blood revealed B. pyocyaneus and B. coli-communior. A culture in broth yielded also a gram-positive chain-forming coccus (enterococcus?).

Fig. 4 (case 3).—High power magnification of section shown in figure 3, showing Bacillus pyocyaneus colonization with necrosis.

Microscopic examination of sections afforded the following data:

The anorectal tissue was scarcely recognizable. There was marked necrosis throughout. The material stained amorphous blue and pink. In places, phantoms of the former cell structures were recognizable. There was very slight infiltration throughout by round cells and a few polymorphonuclears.

The tissue of the gluteal muscle was scarcely recognizable There was marked necrosis throughout.

In the lung, section 1 showed a roughly circular area approximately 4 mm. in diameter, the center of which was necrotic, amorphous blue and pink stained with abundant fibrin present. There were marked hemorrhage into the alveoli about this necrotic area and moderate infiltration by round cells and a few polymorphonuclears. Section 2 showed several fairly large areas (3 to 5 mm.) of scarring with central necrosis. In one area the scar tissue was quite cellular.

On section the appendix showed a wedgeshaped area of necrosis of the mucosa. In places, phantoms of former cell structures were present.

Section of a peribronchial hilar lymph node showed an area of scarring similar to those seen in lungs. There was some central necrosis. At the periphery there were a few scattered foreign body giant cells.

Anorectal and gluteal lesions stained by the gram method showed innumerable gram-negative bacilli adjoining one another almost everywhere. Very little intact fixed tissue was present.

Gram stains of the lung revealed innumerable gram-negative bacilli in many blood vessels and alveoli in the necrotic area. Innumerable gram-negative bacilli were present in the necrotic area of the mucosa when the appendix was stained by the same method. A number of bacilli were present in the regional intact tissue.

CLINICAL OBSERVATIONS

Two acute cases and one quite chronic case showed:

1. The presence of gangrenous lesions in the anogenital region in all three cases.

2. Bacillus pyocyaneus septicemia in one of the acute cases.

3. A toxic appearance with severe prostration in all the cases.

4. Leukopenia in two cases; not present in the case with concurrent Staphylococcus aureus infection.

5. Agranulocytosis in one case. In this connection it is of interest to note that Bacillus pyocyaneus infection has been found present in a considerable number of the reported cases of agranulocytosis.

6. Thrombocytopenia in one case.

7. Ulcerative and erythematous lesions in the mouth in one case.

8. Indolent, erythematous, raised, sharply circumscribed skin lesions, varying in size from a few millimeters to a butterfly lesion 10 cm. in extent over the bridge of the nose in one case. The latter lesion suggested the diagnosis in this case of lupus erythematosus. The fact that many indolent lesions occurred in parts most often unprotected by clothing led to the belief that the condition might be pellagra. A case similar to this was reported by Ashby, Eldridge and Freeman.[9]

9. Terminal bronchopneumonia in the three cases.

PATHOLOGIC OBSERVATIONS

1. Gangrenous genital, anal or rectal inflammation was found in three cases.

2. Bacillus pyocyaneus septicemia was found in two cases.

3. Disseminated erythematous or necrotizing lesions of the alimentary canal were found in three cases. In one case there were multiple erythematous lesions in the esophagus, some with areas of necrosis. A case with even more severe involvement of the esophagus was reported by Barker[4] (case 3).

4. Scattered hemorrhages of the serous or mucous membranes were found in three cases.

5. Bacillus pyocyaneus bronchopneumonia was found in three cases. The pneumonic patches in one case were recognizably different from ordinary bronchopneumonia, the lesion consisting of a coherent coarsely granular gray core, from 1 to several millimeters in diameter, surrounded by an area of hemorrhage or of smooth, red consolidation. The lesions varied from 4 to 12 mm. in diameter.

6. Erythematous, macular, maculopapular and vesicular skin lesions were found in one case.

Microscopically, the primary anal and genital lesions at autopsy showed massive bacterial colonization, gram-negative bacilli (Bacillus pyocyaneus) predominating, with striking necrosis of the tissue. There was slight leukocytic infiltration in places.

Early embolic lesions showed gram-negative bacilli (Bacillus pyocyaneus) in the vessel walls, with regional hemorrhage and at times abundant fibrin deposit.

Fully developed embolic lesions showed a central necrotic core composed of necrotic fixed tissue, very few wandering cells, innumerable gram-negative bacilli, not only in the vessel walls but also in many places adjoining one another for considerable distances; at times there was abundant fibrin present in the core. In some fully developed embolic lesions there was abrupt transition to normal tissue. Gram-stained sections, however, showed gram-negative bacilli in cells beyond the necrotic zone. In others there was a zone of hemorrhage about the necrotic core. This unusual lesion is perhaps most characteristic in the lung.

Healed embolic lesions (lungs, peribronchial lymph nodes) were composed of masses of dense fibrous tissue (several millimeters in diameter) showing some round cell infiltration. Some showed areas of central necrosis and some showed giant cells in places.

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INTRADERMAL IMMUNIZATION IN GONORRHEA

AN EXPERIMENTAL AND CLINICAL REPORT *

B. C. CORBUS, M.D.
CHICAGO

Stimulated by the publications of Besredka[1] on the streptococcus and staphylococcus "antivirus," and realizing the lack of standardization in the treatment of gonorrhea in men, women and children, I made a determined effort in the summer of 1928 to produce a similar product for the treatment of neisserian infections. Up to the present time there have been no published reports in German, English or American literature of any similar product having been produced from the gonococcus.

However, in 1927 Barbilian, Voseboinie and Franke[2] reported (in France) an experience in the treatment of gonococcal anterior urethritis by means of local injections of so-called antivirus. Sixteen men with acute gonorrhea were treated and fourteen were said to be clinically and bacteriologically cured. The gonococci were cultivated in an ascitic fluid medium. Bertarelli[3] (in Italy) made similar clinical experiments but his results were so discouraging that he gave up the use of antivirus preparation.

As it is very difficult to grow the gonococcus on a liquid medium, and as there was failure in producing a satisfactory growth, in the spring of 1929, the assistance of Clark and Ferry of the Research Department of Parke, Davis and Company was obtained. In the fall of 1929 a gonococcal bouillon filtrate was produced and given to us for clinical research. This was found by them to contain a soluble exotoxin and not to be an antivirus. In December, 1930, before the Society of American Bacteriologists they[4] presented their paper on studies of the properties of a bouillon filtrate of the gonococcus, the conclusions of which are as follows:

1. The gonococcus produces an extracellular toxin, when grown in suitable liquid medium, which promotes rapid development.

2. The sterile bouillon filtrate from young cultures contains this extracellular toxin in sufficient concentration to give positive skin reactions in dilutions of from 1:1,000 to 1:1,500.

3. Injection of animals with this toxin stimulates the formation of an antitoxin which will neutralize the toxin in vitro as well as in vivo.

4. Control autolysates and mechanically produced control intracellular extracts give negative skin reaction in low dilutions.

5. An antivirus which met the specifications of Besredka[1] was not produced in liquid cultures of the gonococcus allowed to incubate for six or seven days.

In preparing the gonococcus toxin (bouillon filtrate), cultures were allowed to incubate not longer than from four to six days, and the medium employed was prepared from veal infusion containing 0.1 per cent dextrose and 5 per cent ascitic fluid.

* Read before the Section on Urology at the Eighty-Second Annual Session of the American Medical Association, Philadelphia, June 10, 1931.

1. Besredka, Alexander: Local Immunization, Specific Dressings, Baltimore, Williams & Wilkins Company, 1927.

2. Barbilian, W.; Voseboinie, H., and Mme. Franke: Local Treatment with Antivirus in Cases of Gonococcal Urethritis, Paris méd. **1:** 506, 1927.

3. Bertarelli, E.: Giorn. ital. de dermat. e sifilis **69:** 1477 (Oct.) 1928.

4. Clark, L. T.; Ferry, N. S., and Steele, H. H.: Paper presented in December, 1930, before the Society of American Bacteriologists, J. Immunol. **21:** 233 (Sept.) 1931.

In our early attempt with the bouillon filtrate we directed its application to the urethra in acute anterior urethritis in the male. Elaborate and carefully controlled means of sealing the bouillon into the urethral canal were devised, using it both in concentrated and in diluted form. Later copious urethral irrigations supplemented by hand injections were tried. After a thorough trial met with failure this method of procedure was abandoned.

INTRADERMAL INJECTION

Bearing in mind that Müller,[5] as early as 1922, had called attention to the fact that in gonorrheal urethritis in the male when he had injected intracutaneously small quantities of aolan, there resulted in a few hours a marked stimulation of the urethral secretion, we made an exhaustive review of the literature on intradermal medication. We found that during the last few years three methods of approach had been opened in the defensive mechanism of immunity in man. These comprise, first, the cells that are immunized (the reticulo-endothelial system); second, the route of injection of the immunizing agent (the skin), and, third, the immunizing agent (bacteria or their toxins).

Scientifically, the procedure of influencing disease by way of the skin was introduced in 1796 by Jenner,[6] who is justly called the founder of cutaneous therapy.

It has been known for some time that the skin is not only a simple sheath protector of the body but also an organ of vital importance in the production of immunity and the prevention of infection. It is composed of two very distinct parts considered from the embryologic as well as the histologic point of view; i. e., the epidermis, which is derived from the ectoblastic layer, and the derma, or cutis vera, which is derived from the mesoblastic layer. The derma, or cutis vera, is composed of a network of elastic fibers of great strength interlaced with connective tissue elements. The rich vascularity of this area makes it possible to bring large quantities of blood into the skin; at the same time the histiocytes of the loose connective tissue act as receptive cells.

THE RETICULO-ENDOTHELIAL SYSTEM

While these cells were recognized by Metchnikoff [7] in 1884 and called macrophages, it was not until Aschoff,[8] in 1924, emphasized the cellular mechanism of defense that characterized these cells that Metchnikoff's original conception of immunity was accepted as a rational defensive mechanism.

These cells comprise a large group of cellular elements that arise from the mesenchyme. At times they are very different under physiologic conditions, but their reaction is similar if not identical in response to certain stimuli. According to Maximow,[9] they are found in the spleen, liver, lungs (small amount), omentum, bone marrow, lymph nodes and loose connective tissue. Their nomenclature is varied and confusing, being designated as Kupffer cells in the liver, splenocytes in the spleen, clasmatocytes in the omentum, dust cells in the lung, histiocytes in the lymph nodes and macrophages in the loose connective tissue. In this paper the term histiocytes, as suggested by Maximow, will be used.

All histiocytes play an important rôle in metabolism and are capable of wandering. However, this is manifest only under the influence of stimuli, either local or general.

Whatever irritates the skin, either mechanical or bacterial in nature, not only irritates the histiocytic elements but also sets in motion involuntary nervous stimuli which, according to E. F. Müller,[5] is an equally important factor in the body's resistance to disease, as it is from this vital center that the whole physical mechanism of defense is controlled. His experiments led him to believe "that the entrance of bacterial excitants into the body cause a reaction involving chiefly two groups, (1) the bone marrow system, the originator of the white blood corpuscles, and (2) the involuntary nervous system, the conductor not only of the stimulation from the site of infection to the bone marrow system, but also of the newly formed immunizing substances and leukocytes to the site of infection." This is shown clinically by a leukocytosis during infection of the body.

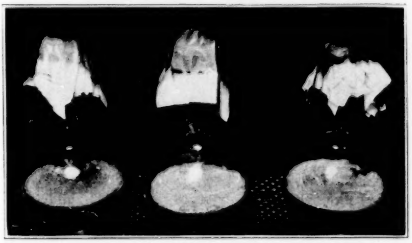

Fig. 1.—Gonococcus growing on liquid culture medium.

He also claims that the skin acts as an amplifier of specific and nonspecific irritants (proteins), and that the response to stimuli introduced intradermally is from 100 to 150 times greater than that produced by any other route.

Although intradermal injections of autogenous gonococcal vaccine have been used with favorable results in gonorrhea by Ryll-Nardzewski [10] and others, it autolyzes too readily to make it a stable therapeutic procedure.

Max A. Goldzieher and Samuel M. Peck,[11] in their experiments on the reticulo-endothelial system, have shown that the histiocytes of the skin respond more quickly to the toxins of the bacteria than to the bacteria themselves.

In consideration of the foregoing data we concluded that if a suitable gonococcal toxin could be prepared and injected intradermally, satisfactory results might be obtained. To our knowledge this is the first attempt to cure acute and chronic neisserian infection by the intradermal administration of a gonococcal toxin (antigen).

CLINICAL REPORT

Since November, 1929, in the private practice of Dr. Vincent J. O'Conor and myself, there have been treated by means of intradermal injections of the

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9. Maximow, A. A., and Bloom, William: A Textbook of Histology, Philadelphia, W. B. Saunders Company, 1930.

10. Ryll-Nardzewski: The Intracutaneous Use of Gonococcus Vaccine, Przegl. Dermatol., 1928, p. 29; abstr. Ztschr. f. Urol. **24:** 373, 1930.

11. Goldzieher, M. A., and Peck, S. M.: Experimental Studies on the Reticulo-Endothelial System: Response to Infection, Arch. Path. & Lab. Med. **3:** 629 (April) 1927.

gonococcus bouillon filtrate 195 persons in various stages of gonorrheal infection.

These were classified at their initial examination as follows: Men: acute, 86; subacute, 23; chronic, 42; total number of men treated, 151. Women: acute, 10; subacute, 5; chronic, 29; total number of women treated, 44. In addition, there were three girl babies treated solely by this method.

The shortest period in which the gonococcus was continuously absent from the secretions in the acute and subacute condition in the male was four weeks. In the acute infections in the female the shortest period was nine weeks. In chronic male infection the shortest period was one week; in the female, nine weeks. The longest period of observation in the male was ten

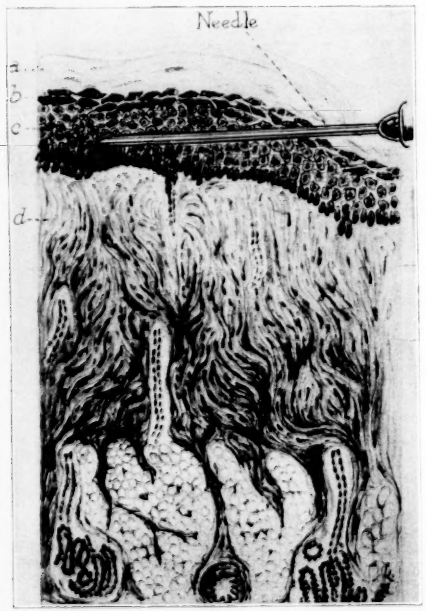

Fig. 2.—Section of the skin of the palm of the hand (reduced from a drawing with a magnification of about 150 diameters), showing site of intradermal injection: *a*, stratum corneum; *b*, stratum granulosum; *c*, stratum malpighii; *d*, stratum corium and fibrous bundles.

months; this patient is still uncured. In the female, the longest period of observation was thirteen weeks. The general average from the initial injection to the apparent complete riddance of the gonococcus in acute urethritis in the male was ten weeks; in the female, twelve weeks. In chronic infection the period of treatment necessary to eliminate the gonococcus was considerably shorter than in the acute cases. This was equally true in men and in women. This was apparently due to the fact that the gonococci were localized in such areas as the urethral glands, the prostate and seminal vesicles in the male and in Skene's, Bartholin's and the endocervical glands in the female.

In this series are included five persons with gonorrheal arthritis; in every case the symptoms rapidly disappeared with intradermal medication and prostatic and seminal vesicle massage.

At the outset, owing to injections of too great an amount of bouillon filtrate, we occasionally produced a severe reaction in the male urethra which resulted in congestion and edema and at times acute posterior infection with a larger percentage of prostatitis and epididymitis than usual. With a more careful administration of dosage we have not only avoided these reactions but we have been able to reduce markedly the percentage of complications as compared with our previous methods of treatment.

In only two patients has there been any reaction suggestive of an anaphylaxis. These were of mild degree. Injections have been resumed after varying periods without untoward effect. In all, something over 2,500 injections have been given, the quantity varying from 0.1 cc. to 3 cc. per dose. The maximum dose now given is 1 cc., as described in detail elsewhere. The majority of patients have only a slight systemic reaction. Locally there is always a certain amount of discomfort at the site of injection, which continues for from twenty-four to seventy-two hours.

In some instances there is a slight febrile reaction for twenty-four hours. The temperature rarely rises above 100 F., and there is a mild toxic general effect.

The complement fixation test for gonorrhea, while not constant after an apparent complete immunization, was positive in a large number of patients.

Acute Gonorrhea in Men and Women

Duration of Infection	Size of Dose, Cc.
3- 7 days (1 week)	0.10
7-14 days (2 weeks)	0.25
14-21 days (3 weeks)	0.35
21-28 days (4 weeks)	0.50
28-35 days (5 weeks)	0.75
35-42 days (6 weeks)	1

No clinical research, however convincing, would be complete without having used the culture medium as an antigen.

From March 15 to June 1, 1931, twelve patients have been under observation at the Evanston Social Hygiene Dispensary. All these patients received intradermal injections of the culture medium. Two subacute and three chronic cases were followed consistently from week to week. While there was a salutary influence on some, the presence of the gonococcus in the discharge was easily demonstrable in all. Because of the irregular attendance and the shortness of the time of observation, no conclusions can be drawn from the other seven cases.

INDICATIONS AND DIRECTIONS FOR USING GONOCOCCAL BOUILLON FILTRATE

Gonococcal bouillon filtrate is indicated in acute and chronic neisserian infections in men, women and children.

It has been possible to standardize the dosage of the bouillon filtrate to meet every requirement.

The size of the first dose is in direct proportion to the duration of the infection.

The scale of dosage in the accompanying table ensures rapid immunization with no untoward effects.

The technic of intradermal injections is discussed later.

The size of the dose for the duration of infection is given in the table. For example, if the duration of the patient's infection is from three to seven days the initial dose would be 0.1 cc. Each succeeding weekly dose is

increased in accordance with the scale given in the table until 1 cc. is given. If the duration of the infection is from twenty-eight to thirty-five days the initial dose would be 0.75 cc., increasing the following week to 1 cc.

When the dosage has reached 1 cc. in any case, this amount is continued at weekly intervals for from four to seven weeks until there is a clinical cure. It is always well to continue the injections for two weeks at least after the disappearance of the gonococcus; should there be a recurrence at this time, the intradermal injections may be resumed.

APPEARANCE OF DISCHARGE DURING TREATMENT

As this is active immunization and not passive, the discharge may not disappear until the fifth to the eighth week, or until at least from three to seven injections intradermally of 1 cc. at weekly intervals have been given, and it may not cease then; it may only cease entirely when there are no more organisms present and all injections have been suspended.

SUSCEPTIBILITY OF THE PATIENT

Occasionally following the dosage as outlined in the table, there is a severe local reaction in the urethra (local swelling, tenderness and inability to void). When this occurs, the size of the last injection given should be repeated after seven days and then increased, the next succeeding dose being used as outlined in the scale.

If an epididymitis occurs, the size of the last injection should be repeated in three days, to be followed in seven days by the next succeeding dose as outlined in the scale.

When there is prostatic involvement the usual procedure of massage should be followed; however, this should not be done until the acute symptoms have subsided and then not more frequently than at three to five day intervals.

SUBACUTE AND CHRONIC GONORRHEA IN MEN AND WOMEN

In every patient in whom the duration of the infection has been more than six weeks, an initial 0.5 cc. is given intradermally the first week and weekly injections of 1 cc. are continued until there is a clinical cure. Usually from six to eight weekly injections of 1 cc. will suffice.

Occasionally when severe edema and swelling of the urethra has persisted, it may be well to start with an initial dose of less than 0.5 cc.

When the prostate and the seminal vesicles are involved, prostatic and vesicle massage is indicated, the same as in acute cases.

GONORRHEAL ARTHRITIS

Gonorrheal arthritis is the most frequent type of metastatic gonorrhea. Almost any joint in the body may be affected and frequently the involvement is multiple. There is often present an accompanying synovitis, tenosynovitis or bursitis.

The knee joint is most frequently involved, but infection of the metatarsal, ankle, wrist, elbow, hip and shoulder joints also occur and are more frequent in the order given.

If gonorrheal arthritis occurs during the course of an acute gonorrhea, there is no difficulty in establishing the correct diagnosis. It is to be emphasized, however, that many chronically inflamed joints are diagnosed as "chronic gonorrheal arthritides." Gonorrheal arthritis may be recurrent but it is not, strictly speaking, chronic. When such a condition is chronic it is the result of adhesions and structural changes remaining as the result of previous acute gonorrheal inflammation.

In gonorrheal arthritis the complement fixation test on the blood is always positive if properly performed. In the absence of a positive test, and with negative smears and cultural observations from the genito-urinary tract, it must be concluded that active gonorrheal infection does not exist.

Frequently a septic infection from the teeth or tonsils is disregarded because the patient gives a history of a previous gonorrhea, and this evidence is unduly magnified as the possible etiologic factor of an acute arthritis.

The dose given here is the same as that described under subacute and chronic gonorrhea.

It is understood that the joints are to be immobilized and prostatic and vesicle massage instituted, together with the administration of the bouillon filtrate.

GONORRHEAL SALPINGITIS

The patient should be in bed and kept there until acute symptoms subside. Here the dose as outlined in the scale should be strictly adhered to. If the duration

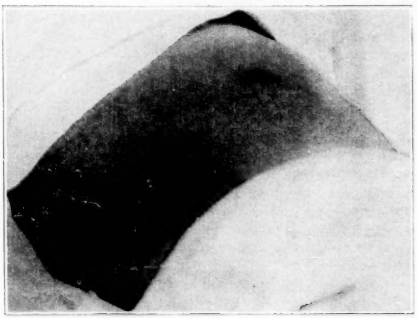

Fig. 3.—Arthus phenomenon. With repeated injections of an antigen in the same place in the skin, local tissue immunity occurs. This becomes so solid from the inflammatory reaction around the site of injection of the foreign protein that the injected material no longer gets into the circulation and eventually produces necrosis. The illustration shows the author's patient who had received seven injections intradermally of 1 cc. of gonococcal bouillon filtrate in approximately the same area in the thigh.

of the infection is more than six weeks, the initial dose should be 0.5 cc., followed by weekly injections of 1 cc.

INFECTIONS IN SKENE'S AND BERTHOLIN'S GLANDS

Directions as outlined for gonorrheal salpingitis should be followed.

NONGONORRHEAL INFECTIONS

Since the gonococcal bouillon filtrate is a specific for neisserian infections and no other infections, it is absolutely necessary that a positive diagnosis of gonorrhea has been made before instituting treatment. It should not be used unless one is sure of the diagnosis. It is not a "cure all" for all urethral infections.

GONORRHEA IN CHILDREN

In gonorrhea in children, aged from 1 to 10 years the size of dose given for the duration of infection is as follows: 0.05 cc. for one week; 0.1 cc. for two weeks;

0.2 cc. for three weeks, and 0.25 cc. for four weeks. Then the dose of 0.25 cc. is continued once a week until the child is clinically cured.

As children show a hypersensitive reaction to intracutaneous injections, severe local irritation with bleeding may occur, if the dose has been too large. In this case the dose should be reduced for children showing such reactions as well as children, aged from 1 to 5 years, diluting the bouillon filtrate with an equal amount of sterile saline solution if necessary.

Caution should always be used not to increase the dosage too fast if there is considerable local irritation.

TECHNIC OF INTRADERMAL INJECTIONS

Any ordinary tuberculin syringe graduated in twentieths of a cubic centimeter will suffice. However, it is important to have a fine needle, preferably a 25 gage.

The most suitable site for injection is on the extensor surfaces of the arms and thighs. (In women the injections are given in the thighs.)

The needle is introduced parallel to the skin surface. As the thickness of the epidermis on the flexor surface is only about 0.2 mm., care should be used to advance the needle slowly with the oblique side upward into the papillary layer for about 0.5 to 0.75 mm. When the injection has been correctly placed, there appears a nontranslucent wheal, alabaster white, sharply circumscribed with a rose pink border, the needle shimmering through the epidermis.

ARTHUS PHENOMENON [12]

With repeated injections of an antigen in the same place in the skin, local tissue immunity apparently occurs. This becomes so solid from the inflammatory reaction around the site of injection of the foreign protein, that the injected material no longer gets into the circulation and eventually produces necrosis. This anaphylactic inflammation occurs, according to Opie,[12] because antigen and antibody have met in the tissue. This is known as the Arthus phenomenon.

In order to obtain general and not local tissue immunity it is advisable to put succeeding intradermal injections at least 6 inches apart from any previous injection.

55 East Washington Street.

ABSTRACT OF DISCUSSION

DR. R. D. HERROLD, Chicago: Dr. Corbus calls attention again to the fact that a great deal can be accomplished in gonorrhea without excessive local medication. Several years ago, working with this product and other bacterial vaccines, I was impressed by the marked improvement of patients who were getting only one local treatment daily as compared with the patients I had been treating three or four times a day. I feel that all would obtain better results, as I am at present, by not permitting any patient to use a syringe, himself, for local treatment, and by giving one injection daily or every two or three days. This must be taken into consideration in evaluation of a series of cases without such overtreatment. In treatment locally, one does not expect to get antiseptic action but stimulation of cells, and here I believe that the cells are stimulated sufficiently by injection every other day. These cells are probably some of the endothelial cells, such as the histiocytes. I shall consider first the product itself. After thorough experiment, I am convinced that the toxic substance in the broth is not essentially different from the autolyzed gonococcus, and therefore if the potency is the same the results will be the same, particularly if it is autolyzed in broth. One must distinguish between different immunologic reactions in the sense of obtaining an antibody that neutralizes toxin. This takes a period longer than seven days, and it is particularly significant that some immunizations, notably typhoid, which has stood the test of years, were produced by the subcutaneous route. Its potency per volume is similar to gonococcus. However, the local stimulation by intracutaneous injection suggests to me nonspecific benefit, and I believe it is entirely possible that such stimulation may be obtained, if of equal potency, by the typhoid toxin. Finally, in the control of a series of such cases one should include some nonspecific observations, and also one should not stop here in the effort to obtain a better biologic or chemical therapeutic measure in the treatment of gonorrhea, but should use this as the stepping stone since disagreeable reactions occur from gonococcic toxin, particularly with 1 cc. of a potency that will give a skin reaction with a dilution of 1:1,000.

DR. P. S. PELOUZE, Philadelphia: Dr. Corbus is to be congratulated on a valuable piece of experimental work. One should not lose sight of the fact that it is definitely experimental, however. Enthusiasm has been aroused so many times by various new treatments for this disease, only to be followed by disappointment, that it would be well to weigh new methods carefully. In this work, serious question could be raised regarding some of the arguments put forward. The proof of the value of any form of treatment rests in one's clinical experiences with it, and in judging the value of intradermal injections of Dr. Corbus' filtrate one is forced to use as standards the results obtainable by the best forms of treatment now existing. And, surely, so far as the time required to eradicate the gonococcus from the male is concerned, it is, by his own statements to me, much inferior to those treatments which have been in use. He informs me that his treatment eradicates the gonococcus in those cases in which only the anterior urethra is infected, rarely in six weeks and usually in from ten to twelve weeks. Our gently carried out local treatments to the urethra of the cooperating male usually accomplish this in six weeks. He further stated to me that it takes his method from six to eight weeks to banish the gonococcus from the patient with a posterior infection who has reached a stage wherein attack of the prostatic infection is safe. One can rarely find the gonococcus in the male who has had prostatic massage for that length of time. True, he still has infection kept up by secondarily invading bacteria, and needs further treatment. This is true also with Dr. Corbus' treatment. Considering the wide circulation of papers read at this meeting, it would be a great misfortune to allow ourselves and others to be too greatly impressed with the value of a treatment for gonorrhea which is so admittedly in its experimental stage that its makers do not feel sufficiently convinced of its value even to place the substance on the market. Particularly is this true when its seeming results compare so poorly with the results that can be obtained by other means.

DR. LEO L. MICHEL, New York: About seven years ago, working in my clinic at the Hospital for Joint Diseases, I called attention to the good results obtained with the nonspecific protein. I reported that, following the intravenous injection of paratyphoid vaccines in acute gonorrheal arthritis, the joint pain and inflammation quickly subsided and the urethral discharge decreased. The course consisted of four injections of paratyphoid vaccine intravenously at intervals of from three to four days, though not infrequently the pain disappeared after the first injection. I was especially impressed with the complete disappearance of the gonococcus from the urethral secretions in cases in which I used this therapy. The results depended on the severity of the reactions obtained. The temperature had to be raised to 103 F. or higher; the severer the reactions were, the better were the results. This experience led me to try the intravenous nonspecific therapy in the acute gonorrheal infections. I had good results in a series of thirty cases, curing them in an average of from two to three weeks. I then ran into a series of failures. The failures were chiefly in the anterior gonorrheal infections; as a rule, the posterior infections responded. Just why this is so I cannot answer. It perhaps is analogous to the fact that this therapy is a failure in the gonorrheal periarthritis inflammation acting only in the

12. Opie, E. L.: Pathogenesis of the Specific Inflammatory Reaction of Immunized Animals (Arthus Phenomenon): the Relation of Local "Sensitization" to Immunity, J. Immunol. **9**: 259, 1924.

inflammation of the articular joint. I never hesitate to use the nonspecific therapy in acute or in chronic anterior or posterior gonorrhea when time is a factor, if there are no contraindications.

DR. A. I. FOLSOM, Dallas, Texas: Dr. Corbus gave me a lot of this solution and asked me to try it in my clinic. We have not yet tried it carefully but have limited it to the chronic cases, that group showing definite clinical manifestations, by which we might show the results of the thing, and I must say that Dr. King, my associate, who has had to do most of the work, is definitely impressed with the clinical value of the method in the chronic complications of gonorrhea. However, we are finding now that by varying the method of injection we are getting distinctly better results in the same type of case as compared with the old subcutaneous or intramuscular injections of milk. We are injecting a small dose of sterile milk intradermally in several areas rather than in one, and it seems to us that probably some of the results may be due to the difference in the method of administration rather than in the intrinsic value of the milk itself. Our experience is entirely too limited to make anything other than simply a suggestion in this direction.

DR. BUDD C. CORBUS, Chicago: Answering Dr. Pelouze concerning the length of time required to cure a given case of gonorrhea, I presume that he is referring to the treatment of gonorrheal infection in the male when he compares the intradermal injection of the gonococcal toxin and other methods of treatment. One must remember that one is using active immunization and not passive. In acute infection, immunization can only be accomplished slowly. On the other hand, in chronic infections, in which the gonococcus is localized, larger doses of toxin permit a more rapid, generalized immunization. The standardization of a method of treatment in acute gonorrheal infection, that requires only weekly injections for from eight to twelve weeks to produce a cure, is far superior to any other method with which I am familiar. The history of the management of gonorrheal infection in women and children is a sad story. Everything known in the realm of antiseptics has been tried. Unfortunately, in a large number of cases the gonococcal infected female remains infected until time and her own resistance finally put an end to the infection. It is just in this class of cases that standardized intradermal immunization with the gonococcal toxin produces the most brilliant results. In regard to Dr. Folsom's work, any nonspecific protein stimulates the reticulo-endothelial system, but a specific protein, either bacteria or their toxins, not only stimulates the reticulo-endothelial system but in addition causes formation of a specific antitoxin which, through the humoral and cellular defensive mechanism of the body, cures these infections. A new era is dawning in the treatment of all infections of the urinary tract. The treatment of colon bacillus pyelonephritis and cystitis by the local injection through a catheter of colon bacillus toxin has been favorably endorsed by Heitz-Boyer, LeFur, Mezeran, myself and others. The treatment of Hunner's ulcer has run the gamut of almost everything known in the realm of therapy. My experience has been most impressive with the removal of focal infection and the combined local applications and intradermal injections of the toxin of the specific organism present. The skin, as an immunizing organ, is far superior to that of any other organ in the body. Here the rich vascular supply of the true skin not only facilitates the formation of protecting substances but also acts as a depot for their dissemination to other parts of the body.

The "Strawberry" Gallbladder.—Moynihan, in 1909, first called attention to small yellowish spots like sand or grit on the mucosa of the gallbladder. In such cases he noticed also that the bile sometimes shimmered because of the presence of cholesterol crystals. . . . Boyd published the first detailed study of the pathology of this remarkable condition. He demonstrated the lipoid nature of the white or yellow deposits that are seen with the naked eye in striking contrast to the dark red background of the rest of the mucosa. By histologic and chemical means he also showed that these lipoid-like deposits were cholesterol, an observation, however, that Lichtwitz was really the first to make.—Elman, Robert; and Graham, E. A.: *Arch. Surg.* **24**:14 (Jan.) 1932.

IODOBISMITOL

A SOLUBLE BISMUTH PRODUCT FOR USE IN THE TREATMENT OF SYPHILIS: PRELIMINARY REPORT *

P. J. HANZLIK, M.D.
H. G. MEHRTENS, M.D.
CHARLES GURCHOT, PH.D.
AND
C. C. JOHNSON, M.D.
WITH THE ASSISTANCE OF JEAN SPAULDING, A.M., AND D. C. MARSHALL, M.D.
SAN FRANCISCO

In our program of studies of antisyphilitic remedies, attempts have been made to test the possibilities for penetration of the brain by certain products. If an antisyphilitic agent could be depended on to do this, the prevention and treatment of neurosyphilis would begin at the time of treatment of acute syphilis. This mode of attack on neurosyphilis is desirable, since it is now accepted that Spirochaeta pallida invades the central nervous system early in the course of the disease. The commonly used antisyphilitic drugs cannot be depended on to penetrate the central nervous system without some previous treatment of the patient to increase the efficiency of penetration. Obviously, if a drug could penetrate unaided, the treatment would have decided advantages. The object of this report is to present a preliminary survey of results with a bismuth product which we have found to penetrate the brain.

The bismuth compounds in current use contain the bismuth as cation, or in basic form. The majority of reports in the literature state that bismuth is not present in the cerebrospinal fluid after the use of compounds of this type, and our results with such products, in very large doses, agree with those of the literature. The few positive results that have been reported are not convincing because of doubtful chemical tests or analytic procedures; and, in some instances, unusual quantities of bismuth are reported.

It is known that the anions bromide and iodide can penetrate the brain and appear in the cerebrospinal fluid, especially after meningeal irritation. In relation to the blood, the cerebrospinal fluid contains more anions and fewer cations. It is claimed by Strecker,[1] who quotes the work of others, that the diffusible cations do not penetrate as readily as the anions, thus suggesting a high order of penetrating efficiency of the latter. Of the ionizable organic salts, the salicyl anion is known to appear in the cerebrospinal fluid. This generalization with regard to anions, however, does not apply to such organic compounds as alcohol and methenamine (hexamethylenetetramine), which do not ionize but yet can appear in the cerebrospinal fluid. Since bismuth, as cation, does not readily penetrate the central nervous system and appear in the cerebrospinal fluid, it occurred to us to test the possibilities of bismuth, as anion. Furthermore, if this ion were combined with a penetrating anion, such as iodine, the

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* Read before the Society for Experimental Biology and Medicine, Pacific Coast Branch, San Francisco, April 12, 1930.
* From the Department of Pharmacology and the Division of Neuropsychiatry of the Department of Medicine, Stanford University School of Medicine.
* Arrangements have been made with E. R. Squibb & Sons to market the product, which will be shortly available for distribution. The name "Iodobismitol" should be considered as nonproprietary and can be used only by the licensees.

1. Strecker, H. A.: J. Ment. Sc. **74**:73 (Jan.) 1928.

possibility of a successful outcome with the bismuth appeared stronger. The presence of iodine in such a product would contribute to antisyphilitic action, if anything.

Although compounds of bismuth, as anion, or in acid form, are not commonly described in textbooks on chemistry, and are unknown to many chemists, such compounds are described in larger and special treatises.[2] The existence of bismuth in this form is more than plausible from the grouping of bismuth with arsenic and antimony in the periodic table. The facts are that bismuth is really a metalloid and is capable of existing as cation or anion in definite compounds. One of the anion, or acidic, compounds is obtainable in the market, namely, sodium bismuthate ($NaBiO_3$), the sodium salt of bismuthic acid. We have tried this compound in a short series of experiments and have demonstrated the presence of bismuth in the brains of animals, but it is practically insoluble in all ordinary and special solvents, and, after injection, remains as an unabsorbable depot.[3] On account of these objectionable features, further work with the bismuthate has been postponed until more promising leads have been explored.

The other anion, or acidic, bismuth compound is the hydro-iodobismuthous acid, which together with its potassium salt was first prepared by Arppe[4] in 1845. A review of the literature showed that a number of salts and esters of this acid had been prepared, but the information in most cases was meager, incomplete or indefinite; and generally the physical constants of the compounds were not given. Some authors gave crystallographic constants. Pending a summary of the literature on this subject in a separate paper, it will suffice to state here that the object of chemists, in preparing some of these compounds, was to verify the position of bismuth in the periodic system; i. e., its close association with arsenic and antimony. This was done generally by complicated and tedious methods of synthesis. It appeared that some of the products described might be mixtures rather than definite compounds, and others impure compounds, but the existence of certain isomorphous compounds (iodo-arsenite and iodo-antimonite)[5] made the claims of anionic bismuth convincing.

The first task was to prepare in pure form certain compounds which appeared promising for our use, and to identify the bismuth as anion. For this purpose, the sodium iodobismuthite was chosen. The chlor-, brom-, and sulfocyanbismuthites have been prepared, and also certain esters of iodobismuthite, but this report is limited to the sodium iodobismuthite. Since the compound is dissolved in ethylene glycol, the abbreviated name "iodobismitol," which indicates the essential chemical composition and suggests the solvent, has been adopted for the product. The following abstract gives a summary of the essentials of its chemical composition, properties and pharmacologic and clinical actions. The details will be published later, possibly in several papers, but it is believed that a summary is in order at this time in view of our promising results, and because it is desirable to obtain clinical data on a larger scale than we alone could possibly obtain for a long time.

2. Mellor: A Comprehensive Treatise on Inorganic and Theoretical Chemistry **9**: 676, 1929. Abegg: Handbuch für anorganische Chemie **3**: 656, 1905. Rammelsberg: Handbuch der Kristallographie **1**: 318, 1881. Groth: Chemische Kristallographie **1**: 440, 1906.

3. Gurchot, Spaulding, Mehrtens and Hanzlik: Proc. Soc. Exper. Biol. & Med. **27**: 509, 1930.

4. Arppe: Poggendorff's Annalen **64**: 237, 1845.

5. Nicles: Compt. rend. Acad. d. sc. **35**: 392, 1859; **50**: 872, 1860; **51**: 1097, 1860; J. de pharm. et de chim. **40**: 321, 1861; Chem. Zentralbl. 1861, p. 239; 1861, p. 176; 1860, p. 176.

METHOD OF PREPARATION AND PROPERTIES

Briefly, sodium iodobismuthite is prepared by the addition of a small excess of dry sodium iodide to a saturated solution of bismuth chloride or bismuth iodide, which, however, is not easily obtainable in the market, in anhydrous ethyl acetate until the reaction is complete. The whole is filtered to remove any sodium chloride or iodide, which is insoluble in ethyl acetate, and the filtrate is evaporated with the aid of a current of air at room temperature. The dry residue is treated with 95 per cent alcohol to form a concentrated solution and allowed to crystallize. The supernatant alcoholic solution is decanted and the crystals are dried at room temperature. The crystals are monoclinic and a brilliant red. Sufficient crystals to give a concentration of 6 per cent are dissolved directly in cold ethylene glycol, commonly known as glycol, containing 12 per cent of sodium iodide (dry). This solution is the iodobismitol. It is placed directly, without sterilization, into clean glass ampules containing 2 cc. each, for use by intramuscular injection.

Several iodobismuthites are possible, but we have limited ourselves to the crystals separating out from alcohol. According to chemical analysis of these crystals, the bismuth content is 23.5 per cent (average). When the product is more exactly controlled and purified, by appropriate measures, the final crystals appear to consist of a single compound with a bismuth content of 21.5 per cent (average) and the empiric formula appears to be $Na_2BiI_5 4H_2O$. The colored ion migrates to the anode without liberation of iodine and therefore the bismuth exists as anion, whereas the bismuth of bismuth sodium tartrate, in 25 per cent sucrose solution, migrates to the cathode and therefore would appear to exist in the latter compound as a cation. The question whether the iodobismuthite may be regarded as a double salt, in the older sense of potassium mercuric iodide, may be answered in the negative for reasons already mentioned, and also because the ionic migration of the mercury in potassium mercuric iodide is similar; i. e., the mercury migrates to the anode (positive pole). In these compounds, the metals exist as complex ions. The name "iodobismuthite" is, of course, well established in chemical researches on bismuth.[2] This matter is not pertinent here and will be discussed in a separate paper on the chemistry of iodobismuthite. Iodobismuthite is a reducing agent in alkaline solutions. The crystals give concentrated solutions in water without hydrolysis, and these may be diluted in the presence of sodium iodide, but dilution with water alone causes hydrolysis and precipitation. On the other hand, the crystals dissolve readily in glycol alone without hydrolysis, and the solution can be diluted with water within certain limits without turbidity. A certain amount of the glycol solution, but not of an aqueous solution, can be added to whole serum without precipitation, and with the addition of iodide the precipitation is prevented, so that a 23 per cent solution of iodobismitol in whole horse serum will not result in precipitation or will cause only a faint turbidity, and the color becomes yellowish. Aqueous solutions when injected are precipitated in the muscles, cause pain and irritation, and give irregular absorption, whereas the glycol solutions leave no yellowish precipitate or only a very slight one, and are practically nonirritating.

The effect of iodide varies with the conditions of usage. Used with iodobismuthite in glycol, a concentration of 10 per cent iodide is sufficient to prevent precipitation of whole serum (the end-concentration of

iodide in the mixture is about 1.5 per cent), but this will vary with the quantities of both serum and iodobismitol. The addition of iodide to the serum first and then of the iodobismuthite in glycol requires much more iodide to prevent precipitation. In life experiments on guinea-pigs, 10 per cent iodide with iodobismuthite in glycol gave slight precipitation at the site of injection in some animals, but 12 per cent iodide resulted in no evidences of precipitation, and therefore the 12 per cent concentration was adopted.

Other solvents for iodobismuthite besides glycol are glycerol, propylene glycol, alcohol and ethyl acetate, but not ether, chloroform, carbon disulphide, petroleum benzin, fixed oils and liquid petrolatum. Of these solvents, only the glycerol offered immediate possibilities as a vehicle for injection, but comparisons with glycol in patients showed that from 2 to 3 cc. quantities of glycerol were somewhat more irritating and painful than the same quantities of glycol; in fact, injections of glycol were generally no more objectionable than the introduction of the needle alone. Moreover, glycol is more mobile (less viscous), spreads more readily and evenly, is easier to handle, and is more antiseptic and apparently less toxic than glycerol.[6] Therefore, the choice of solvent fell on glycol. In glycol, the iodobismuthite is not dissociated and it is partly in chemical combination, since the bismuth compound can be distilled and, after extraction with chloroform or ether and evaporation of the chloroform or ether of the extract, a reddish brown residue remains containing the organic compound. These properties explain, in part at least, the comparative nonirritant action of the glycol solution. The iodide prevents precipitation and hydrolysis and thus promotes absorption of the compound, but in what form exactly we are not prepared to state. Thus, the use of glycol as a solvent permits the use of an inorganic compound of bismuth for injection. Other bismuth and metallic salts will probably be found to be soluble in glycol, but we have not found the subcarbonate, subnitrate and subgallate of bismuth, and bismuth sodium tartrate (Searle) to dissolve. Bismuth salicylate dissolves to a small extent after heating, but, on cooling, separates out. After solution with the aid of alkali, the tartrate, subgallate and subsalicylate can be freely diluted with glycol without precipitation.

ACTIONS OF IODOBISMITOL

Local Irritation.—This has been found to be so small as to be practically negligible with doses coming within the therapeutic range injected intramuscularly. Many patients have been unable to discriminate between injection of the product and injection of a corresponding volume of glycol, but a difference from a corresponding volume of saline solution could be recognized by the presence of some local soreness which, however, disappears quickly, so that patients have no objection to repeated injections. One of us (C. C. J.) who received an intramuscular injection of iodobismitol experienced only a slight burning sensation locally for about one hour without any other changes later. There have been no demonstrable local inflammatory changes and no abscesses among a total of 120 patients to date receiving repeated injections; only five patients, who had received many previous injections of mercury or of bismuth or were in poor condition from advanced syphilis, had some local induration following a number of injections of iodobismitol. Some few patients have complained of a greater local, though temporary, burning sensation than others. Other bismuth products in aqueous and oily mediums have not been as well tolerated and have caused local changes. Dozens of guinea-pigs, rabbits and rats have been injected with corresponding and higher doses of iodobismitol without evidences of local irritation or abscess formation. With the highest doses and with concentrations above 30 per cent of the compound employed in determining fatal dosage, some hardening of muscle and local precipitation has been found, but these conditions do not obtain in therapeutic usage. In rabbits, iodobismitol caused some lacrimation, slight hyperemia and a slight and temporary chemosis, which was indistinguishable from that of glycol alone, whereas the same strength of iodobismuthite and iodide in water caused definite chemosis, and iodide in water did not. Accordingly, there would seem to be some small degree of irritation in sensitive regions, such as the conjunctiva or mucosa, but not in muscle, in sensitive individuals and in those with lowered tissue resistance.

Toxicity.—Thirty-nine of forty adult patients have received total quantities up to 2.2 Gm. of the compound (with and without iodide), equivalent to 0.519 Gm. of bismuth, within three weeks without evidences of systemic toxicity, one injection being given every three days. Among the remaining eighty patients, many have received total quantities up to 6.4 Gm. of compound (1.5 Gm. of bismuth) over longer periods without demonstrable injury. Guinea-pigs receiving total doses of from 5 to 115 mg. (bismuth ion) per kilogram of the compound intramuscularly, in divided doses over periods of from seven to sixty-one days, showed the usual fluctuations, or no changes, in body weight. Albuminuria has not been demonstrated, even in two patients who showed salivation—one patient after 1.2 Gm. of the compound in ten injections on alternate days, and the other, after 2.16 Gm. in eighteen injections. The kidneys have been examined after repeated small doses in guinea-pigs with the following results: no demonstrable changes after a total of 20 mg. of iodobismuthite (4.72 mg. of bismuth) per kilogram; after from 37 to 82 mg. (from 8.7 to 19.4 mg. of bismuth), variable, moderate congestion and cloudy swelling; above 82 mg. per kilogram, marked congestion and cloudy swelling. The total therapeutic dose in a man weighing 70 Kg. and receiving one course of ten 2 cc. injections, or 1.2 Gm. of iodobismuthite, the equivalent of about 4 mg. of bismuth per kilogram, is about four fifths of, and after twenty 2 cc. injections, or 2.4 Gm. of iodobismuthite, equivalent to 8.1 mg. of bismuth per kilogram, only three fifths more than the doses which gave no demonstrable changes in guinea-pigs. After four courses of ten 2 cc. doses, or 4.8 Gm. of iodobismuthite, equivalent to 16.18 mg. of bismuth per kilogram, the total dose would be about equal to the median dose causing variable and moderate congestion. Since a large part of the bismuth is excreted, it would appear that three or four courses spaced by short intervals could be given with safety so far as renal irritation is concerned. Other experiments and clinical observations, which we hope to report separately, show that the dosage of glycol in iodobismitol, used in single and repeated doses, is far too small to cause the experimental oxaluria or calculi of very high and toxic doses reported in the literature; in small doses the glycol is presumably completely oxidized in the body.

The determination of fatal doses of iodobismitol in animals has thus far given certain difficulties owing to

6. Fuller: J. Indust. & Engin. Chem. **16**: 624, 1924.

the large volumes necessary in which the toxicity of glycol must be considered. The following dosages have been obtained with iodobismitol intramuscularly: The minimal fatal dose in rats was about 0.106 Gm. of iodobismuthite (24 mg. of bismuth) per kilogram, and in rabbits more than 0.127 Gm. of iodobismuthite (30 mg. of bismuth) per kilogram. With 10 per cent iodobismuthite in glycol alone, the minimal fatal dose in rats was less than 0.13 Gm. (30.7 mg. of bismuth) per kilogram. Solutions of iodobismuthite in glycerol gave somewhat smaller fatal doses than the glycol solutions. The use of very concentrated solutions (from 30 to 50 per cent) in glycol or glycerol caused precipitation and irregular absorption, with a consequent increase in the size of the fatal dosage. Intravenously, the fatal doses of iodobismitol were as follows: The minimal fatal dose in rats was about 0.03 Gm. (7 mg. of bismuth) per kilogram, and in rabbits about 0.063 Gm. (14.9 mg. of bismuth) per kilogram. Iodobismuthite without iodide caused embolism. The data are being amplified in several ways, but, in general, the margin of safety is sufficiently indicated by the fact that the intramuscular fatal dose of iodobismuthite was about 62 times, and the intravenous fatal dose about 18 times, the single therapeutic dose. Intravenously, the toxicity of iodobismuthite appears to be no greater than that of the bismuth sodium tartrate (Searle). From these results, and also from the fact that intravenous injections of 3 cc. quantities in three patients were symptomless, subjectively and objectively, accidental vein injection should not be harmful.

Absorption and Excretion.—Fifty-nine of sixty-three guinea-pigs receiving daily divided doses within the therapeutic range, i. e., from 5 to 115 mg. per kilogram, with a sojourn of the compound of from seven to fifty-one days, have shown either no evidences of the compound at the site of injection or only a slight yellowish color in the muscles. Four patients receiving up to 2.2 Gm. (0.519 Gm. of bismuth), in from twelve to eighteen divided doses, showed no shadows on roentgen examination of the injected areas one month and six weeks after the last injection. One patient who had received twenty doses on alternate days showed slight shadows in three or four of the injection sites at the end of the twentieth injection. Two patients showed no shadows six hours, and one, two and three days after injection of single doses of 2 cc. Correlated with these results, which suggest a rather complete and rapid absorption, is a high urinary excretion of bismuth. Two ambulatory human subjects receiving a total of 0.1 Gm. each of iodobismuthite (0.0236 Gm. of bismuth) excreted 75 and 80 per cent of the total administered at the end of twenty-four days. A rabbit excreted 44 per cent of 0.043 Gm. (0.01 Gm. of bismuth) at the end of twenty-two days. The data in other subjects and rabbits are not yet complete, but all the results point to a more rapid excretion of bismuth than after the bismuth metal and bismuth compounds in oil. In general, the total urinary excretion of bismuth after iodobismitol compares with that after bismuth sodium tartrate (Searle), which has given a median of about 45 per cent after similar doses; i. e., after 0.03 Gm. of compound, equal to 0.022 Gm. of bismuth, but the rate of excretion may be slower.

As to the form in which the bismuth of the iodobismitol is absorbed and excreted, nothing is known, but we hope to investigate these questions later. A part of the compound is undoubtedly hydrolized at the site of injection, but it is believed that a part is absorbed as such. The yellow precipitate occurring locally on muscle suggests the hydrolysis, but this is by no means always present, except with very high concentrations.

Penetration of the Brain.—This has been the main object of attention in our experimental work. The results have been obtained mainly in guinea-pigs and rabbits given injections mostly in doses falling within the therapeutic range, thus differing from most results of the literature, which have been obtained with toxic and fatal doses of other bismuth products. Of forty-one guinea-pigs receiving the iodobismuthite in glycol, with and without iodide, in doses of from 19.6 to 451 mg. (equivalent to from 4.6 to 106.4 mg., median 17.2 mg., of bismuth) per kilogram intramuscularly, in daily divided doses during periods of from five to thirty-nine days (median, eighteen days), thirty-eight, or 92.7 per cent, showed the presence of bismuth in the brain and blood. The amounts demonstrated ranged from about 0.003 to 0.7 mg. (median about 0.1 mg.) of bismuth per hundred grams of brain. Of eight rabbits receiving subtoxic and fatal doses (from 164 to 1,300 mg., the equivalent of from 38.7 to 306.8 mg. of bismuth per kilogram intramuscularly) during periods of from one to seventy-three (median, six) days, all showed bismuth in the brain, as did also seven out of eight rabbits receiving the iodobismitol intravenously. The rabbits given intramuscular injections showed a median of about 0.2 mg. of bismuth per hundred grams of brain, and those intravenously, less; i. e., about 0.08 mg. These quantities of bismuth appear small, but it must be borne in mind that the total dosage employed, particularly in guinea-pigs, was small.

The accuracy of the method permitted the recovery of added quantities of bismuth coming within the range of the results after iodobismuthite. The added precaution was employed of analyzing simultaneously the bismuth content of the blood, liver, kidney and brain and eliminating all experiments in which the kidney did not show the largest amount of bismuth per gram. Except for an occasional accident in analysis, it was invariably true that the kidney contained the most bismuth, thus indicating a typical distribution of bismuth after iodobismuthite as after other bismuth compounds. The concentration of bismuth in the brains of about one-half the number of guinea-pigs was somewhat less than in the blood, but in the remaining half it was the same or somewhat higher (median, 0.1 mg. in 100 Gm. of blood, or 1: 1,000,000). This suggests a fairly even distribution between the blood and brain. The brain content of bismuth could not be due to the blood of the brain, since the latter contains only about 1.24 per cent of its weight of blood (Vierordt). It was not possible to obtain sufficient cerebrospinal fluid from the animals for analysis, but the spinal fluid of one rabbit gave a positive test for bismuth. In two moribund patients injected with iodobismuthite, the brains showed the presence of bismuth. How much of the bismuth appears in the brain as cation, and how much as anion combined with iodine, is not known.

Cerebrospinal Fluid of Human Subjects.—Of forty human subjects with cerebrospinal syphilis or dementia praecox, thirty-seven, or about 92 per cent, showed the presence of bismuth. The quantities in the positive cases ranged from 0.001 to 1.162 mg. of bismuth per hundred cubic centimeters (median, 0.005 mg., or about 1: 20,000,000 concentration). This low concentration would be expected, since the most that

could be in the tissues is a concentration of 1:2,650,000 of bismuth after a single dose of iodobismitol, and of 1:265,000 after ten doses, on the assumption of complete absorption and retention. However, most of the bismuth is excreted, so that if only about one-fifth the total given remains in the body, the bismuth concentration in the brain may be closer to 1:10,000,000, which makes the low concentration found by us in cerebrospinal fluid understandable. These tissue concentrations of bismuth after iodobismitol would be comparable with those after the dosage of bismuth necessary for antisyphilitic action, according to Lomholt,[7] who suggests 0.5 mg. of bismuth per kilogram daily (1:2,000,000), and a total dosage of 5 mg. of bismuth per kilogram (1:200,000). The total dosage of the iodobismuthite in glycol, with and without iodide, was from 0.7 to 2.2 Gm. (median, 1.71 Gm., or 0.404 Gm. of bismuth) intramuscularly in from three to twelve divided doses. In six patients, the bismuth was demonstrated in the cerebrospinal fluid at the end of eighteen days after the injection of the first dose of iodobismuthite, and bismuth was still present in the spinal fluid two weeks after the last dose was given. Although the quantities of bismuth in cerebrospinal fluid were small and variable, there is no doubt that positive tests, at least for bismuth, were obtained in the great majority of subjects, and iodide was not indispensable to the appearance of the metal.

On the other hand, thirteen out of seventeen cerebrospinal fluids from as many patients receiving total doses of from 0.2 to 16.9 Gm. (median, 9.2 Gm.) of bismuth in the form of bismuth metal, potassium bismuth tartrate in oil or bismuth salicylate in oil, in divided doses intramuscularly, showed no bismuth and two of the four positive tests were doubtful. The dosage of bismuth in the latter patients was, of course, much greater than that in the patients receiving the iodobismuthite. The doses of iodobismuthite per kilogram in the animals were about twice the doses of the compound in patients. Therefore, it is planned to increase the dosage in patients with the view to increasing the content of bismuth in the brain and cerebrospinal fluid, although this may not ultimately prove desirable or necessary, since the antisyphilitic concentration of bismuth is exceedingly minute. The results obtained thus far with iodobismitol indicate that the product can be depended on to penetrate the brain in the majority of individuals.

After most of our work with older products of bismuth and iodobismuthite had been completed or started, bismuth sodium tartrate (Searle) was accepted for New and Nonofficial Remedies. Experiments with this water-soluble bismuth, with and without the administration of iodide, are under way in both man and animals to see how the cerebral penetration of this bismuth product will compare with the iodobismuthite, but the results are too incomplete to warrant a statement at this time.

Antisyphilitic Action.—Iodobismitol has been tested for its action on syphilitic virus in the experimental syphilis of rabbits and in clinical syphilis with definite effects. In thirteen rabbits that were used in prophylactic experiments on scrotal chancres, iodobismuthite, in doses of from 0.03 to 0.2 Gm. per kilogram intramuscularly, prevented the appearance of lesions during a period of three months, whereas seven untreated rabbits showed fully developed lesions containing spirochetes at the end of from sixteen to thirty days. Pairs of rabbits treated with bismuth sodium tartrate (0.01 Gm. per kilogram) and sodium bismuthate (0.032 and 1 Gm. per kilogram) intramuscularly showed no lesions during periods of from three to six months. Of two rabbits treated with neoarsphenamine intravenously (0.025 Gm. per kilogram), one showed positive lesions at the end of fifty-four days. Lymph node transfers from the rabbits receiving iodobismuthite (over 0.03 Gm.), bismuthate and bismuth sodium tartrate were negative, but the majority of untreated controls were positive.

In curative experiments on rabbits with developed chancres, using all drugs per kilogram intravenously in weekly injections for from two to three weeks, the results were as follows: After iodobismuthite, 0.04 to 0.1 Gm., the lesions in thirteen rabbits were free from spirochetes in twenty-four to forty-eight hours and healed in from two to five weeks earlier than the controls. In ten rabbits receiving total doses of from 0.015 to 0.0375 Gm., the acute lesions were unaffected. In pairs of rabbits after bismuth sodium tartrate, 0.025 Gm., the lesions were spirochete-free at the end of forty-eight hours and healing occurred at the end of seventeen days; after bismuthate, 0.4 Gm., the lesions cleared at the end of seventy-two hours and healed at the end of twenty-one days; after neoarsphenamine, 0.075 Gm., intravenously, the lesions cleared at the end of four hours and healed at the end of nineteen days. The lesions of the twelve untreated controls showed spirochetes until the end of twenty-eight days and did not heal until the end of forty-nine days (medians). Lymph node transfers from the majority of rabbits receiving a total of 0.05 Gm. and over of iodobismuthite per kilogram were negative at the end of three months, but a considerable proportion of those receiving less than 0.04 Gm. per kilogram and most of the untreated controls were positive. Lymph node transfers after the other drugs were not obtained.

Our results in clinical syphilis are limited on account of the difficulties of obtaining acute, untreated cases. The clinical material under the direction of one of us (H. G. M.) does not yield such cases and the work must be delegated to others. The following data were obtained for us by Drs. H. E. Alderson and Esteban Reyes of the Stanford Dermatological Clinic. Each patient received 2 cc. of iodobismitol, containing 0.12 Gm. of iodobismuthite, every three days. Patient G. G., with symptoms of primary syphilis and spirochetes in a tonsillar ulcer, responded with clearing of the spirochetes and healing of the lesions at the end of the third injection of iodobismitol (total, 0.36 Gm. of iodobismuthite). Patient V. E., with secondary syphilis, responded with clearing of the spirochetes from papules at the end of the third injection (0.36 Gm. of iodobismuthite), and healing of skin lesions at the end of five injections (0.6 Gm. of iodobismuthite). Patient W. W., with symptoms of secondary syphilis, responded with disappearance of the roseola at the end of the fourth injection (0.48 Gm. of iodobismuthite). The Wassermann reaction has remained positive, but full courses of treatment have not yet been given and negative tests would not yet be expected. The injections have been tolerated without local or systemic reactions. After this summary was in proof, Drs. Alderson and Reyes reported that clearing and healing of acute lesions in eight additional patients occurred after from three to thirteen (average five) injections of iodobismitol; the Wassermann reaction remained

7. Lomholt: Brit. M. J. 2:887 (Nov. 16) 1929.

positive in positive cases and negative in the negative cases.

The main value of our results in experimental and clinical syphilis is the demonstration of a definite spirocheticidal action of the bismuth in iodobismitol. This would be expected of an absorbable bismuth product. As for the efficiency and permanence of the curative action, the results with iodobismitol may be expected to be the same as with any readily absorbable bismuth. In neurosyphilis, it is reasonable to believe that fully as much and more may be expected of iodobismitol, since our results indicate the appearance of bismuth in the brain and cerebrospinal fluid. The impression of one of us (H. G. M.), based on results with fifty patients to date, is that iodobismitol is certainly as effective as, and probably superior to, other bismuth products, but a longer trial and more cases are necessary before a definite opinion can be given. Consequently, iodobismitol would seem peculiarly adapted to the prevention and treatment of neurosyphilis from the beginning of the treatment of acute syphilis. Whether such treatment should be combined with the arsphenamines is a matter that does not come within the scope of this paper.

PROPOSED DOSAGE

The following dosage is proposed on the basis of our experience to date: Two cubic centimeters of iodobismitol should be injected intramuscularly thrice weekly, the needle being emptied with a little air and the part being gently massaged after each injection. Two days should be left free between injections. Up to ten or twelve successive injections may be given within four weeks as a single course of treatment, and from three to four courses, with periods of about two weeks' rest between courses. As stated in the text, bismuth has been demonstrated in the cerebrospinal fluid after a course of ten injections. In case of salivation or stomatitis, the injections should be stopped and a short period of recovery allowed. These signs in the mouth are the inevitable result of effective bismuth therapy and do not necessarily call for special treatment unless severe.

In a recent review of bismuth compounds used in the treatment of syphilis, Lomholt[7] suggests, on the basis of extensive experience, that the daily dose for antisyphilitic action should be the equivalent of about 0.5 mg. of bismuth per kilogram of body weight, and that a total of from 4 to 5 mg. of bismuth per kilogram should be given in one course. It will be seen that the proposed dose of iodobismitol agrees closely with Lomholt's recommendation; namely, the equivalent of 0.47 mg. of bismuth per kilogram for a person weighing 60 Kg., or 0.41 mg. for one weighing 70 Kg., and a total of 4.5 or 4.1 mg. per kilogram during a single course of ten injections. For various reasons, Lomholt indicates a preference for the bismuth oxychloride in suspension. Iodobismitol is hydrolyzed, in part at least, to a related compound, bismuth oxyiodide, which would act similarly to the oxychloride. Hence, it appears to be more than a coincidence that the oxychloride should, through empiric choice, possess desirable properties, in view of our results with the iodobismitol.

CONCLUSIONS

1. A preliminary report is submitted on the properties and actions of iodobismitol, a soluble and injectable preparation of bismuth, containing the bismuth as anion. Theoretical considerations for using bismuth in this form are given.

2. Iodobismitol consists of sodium iodobismuthite (6 per cent) dissolved in ethylene glycol containing sodium iodide (12 per cent). It is injected intramuscularly in doses of 2 cc. containing 0.12 Gm. of iodobismuthite (equal to 0.0236 Gm. of bismuth), a proposed course of treatment consisting of ten injections in about three weeks, to be followed by a rest period and additional courses as further experience may indicate.

3. Used in doses within the therapeutic range, iodobismitol was found to be generally well tolerated locally and systemically, to be fairly rapidly absorbed and excreted, to possess antisyphilitic action, to penetrate the brain of animals, and to appear in the cerebrospinal fluid of human subjects.

Accordingly, iodobismitol possesses certain advantages over the bismuth products in current use which contain the bismuth as cation and do not dependably penetrate the brain.

4. Iodobismitol appears worthy of clinical trial in the treatment of syphilis since it offers the possibility of early treatment, and of prevention, of neurosyphilis.

Sacramento and Webster streets.

NARCOLEPSY

RESULTS OF TREATMENT WITH EPHEDRINE SULPHATE *

JOHN B. DOYLE, M.D.
AND
LUMAN E. DANIELS, M.D.
Fellow in Neurology, the Mayo Foundation
ROCHESTER, MINN.

We[1] first gave ephedrine sulphate for narcolepsy, Sept. 9, 1930. Now that practically one year has elapsed, it seems desirable to analyze the results of this form of treatment in order to determine, so far as possible, its value. Priority in the use of ephedrine belongs to Janota[2] and Skala,[3] who reported its use in the treatment of narcolepsy at the meeting, June 21, 1930, of the Neurological Society of Prague. Although the report was exceedingly brief, it is evident that these authors obtained favorable results. At the time we first used the drug we had no knowledge of its previous use, since the proceedings of the meeting at Prague were published only in the October number of the *Revue neurologique*, which was received in the United States of America about November 23.

Narcolepsy is characterized by attacks of irresistible sleep, without apparent cause, and in most instances by spells of weakness on emotional stress, particularly on laughing. The latter symptom is often referred to as cataplexy. In addition, these patients frequently gain in weight and may suffer from hypnagogic hallucinations, transient attacks of diplopia, and disturbed nocturnal sleep.

RESULTS IN CASES NOT TREATED WITH EPHEDRINE

In order to estimate the value of any method of treatment, it is necessary to have an accurate concept of the disease in cases in which that treatment has not been used. Accordingly, patients suffering from narcolepsy, who had been examined between Jan. 1, 1919, and

* From the Section on Neurology, the Mayo Clinic.

1. Daniels, L. E.: Symptomatic Treatment for Narcolepsy, Proc. Staff Meet., Mayo Clin. **5**: 299-300 (Oct. 22) 1930. Doyle, J. B., in discussion on Daniels, L. E.: Ibid., p. 300.

2. Janota, M., in discussion on Pelnar: Narcolepsie avec catalepsie, Rev. neurol. **2**: 427-428 (Oct.) 1930.

3. Skala, M., in discussion on Pelnar: Narcolepsy avec catalepsie, Rev. neurol. **2**: 428 (Oct.) 1930.

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Sept. 1, 1930, were written letters of inquiry. Information was obtained in sixty-seven cases.

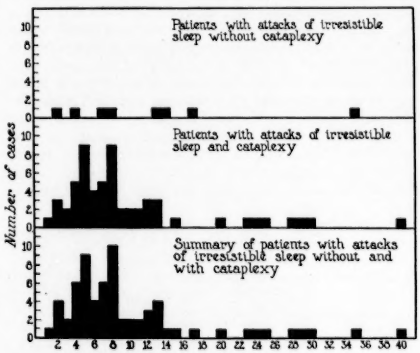
The accompanying chart shows the duration of symptoms at the time of reply to the letter of inquiry, or at the time of death. It also shows the duration of symptoms of the fifty-nine patients who had somnolent attacks and cataplectic seizures, and of the eight who had attacks of irresistible sleep only. It will be seen that the majority of the cases were of four to eight years' duration at the time of reply to the inquiry. One of the patients was subjected only to somnolent attacks for seventeen years, and one for thirty-five years. In one case cataplectic seizures developed after the patient had had somnolent attacks for sixteen years.

Four patients died. One of them was a man, aged 39, who had had somnolent and cataplectic attacks for four years and who died suddenly a few days after he returned home. He had received treatment by roentgen rays over three fields: a frontal, a right temporal and a left temporal. The dose used was about three-fourths erythema dose on the surface, and, by cross-fire, should have produced approximately 60 per cent of the surface dose in the region of the floor of the third ventricle. Although it is well known that the hypothalamic region is very resistant to irradiation, it is conceivable that some latent process may have been activated to the point at which it could have produced death. Such an assumption, however, would be purely speculative. Seven other patients suffering from narcolepsy, who were similarly treated, did not sustain any untoward symptoms attributable to this form of treatment. Another one of those who died was a woman, aged 42, who had had attacks of irresistible sleep and cataplexy for thirteen years and who died from pelvic infection several months after returning home. A third death was that of a man, aged 46, who had somnolent attacks only, and who died following an illness of a few days, one year after his visit to the clinic. The somnolent attacks had become more frequent and prolonged. This patient's blood gave a positive Wassermann reaction; the cerebrospinal fluid was negative in detail. The fourth patient of those who died was a man, aged 43, who had had only somnolent attacks for six months at the time of admission. He died at home one year later, three and a half hours after tonsillectomy under anesthesia with cocaine. Careful anatomic examination of the brain was not made in any of these cases.

TABLE 1.—*Course of Narcolepsy (Patients not Given Ephedrine)*

Patients traced	67
Improved	30
Markedly	4
Moderately	4
Slightly	8
Very slightly (one without cataplexy)	14
Same (four without cataplexy)	25
Worse (one without cataplexy)	8
Died (two without cataplexy)	4

Table 1 represents an attempt to estimate the progress or course of the disease as it affected the sixty-seven patients who were traced. Of the four patients who were markedly improved, one, a man aged 46, had had disturbed nocturnal sleep, with many dreams, for twenty years. In the last three years prior to his admission, however, the dreams had become horrible. For the same period of twenty years he had been subject to attacks of irresistible sleep. This tendency had become worse in the last ten years. Four years before his admission to the clinic, and sixteen years after the onset of diurnal somnolence and disturbed nocturnal sleep, he had begun to have cataplectic seizures. From a letter received four years after his visit to the clinic, it was learned that he was much better. In addition, he wrote: "I still fall asleep at times but do not collapse as formerly." The second of these four patients, a youth aged 17, who, eleven months before admission, began to have attacks of irresistible sleep, and spells of weakness on laughing, stated that his attacks of irresistible sleep had ceased five months after the onset, following lumbar puncture and withdrawal of cerebrospinal fluid. The cataplectic attacks had persisted. One and a half years after his admission the patient wrote: "I am entirely well except for slight spells of weakness." The reaction of this patient to drainage of spinal fluid resembles those of the two patients described by Lhermitte.[4] One patient, who had shown moderate improvement, had suffered from the syndrome for thirty years. It is our opinion, confirmed in several instances by voluntary statements of patients, that apparent improvement is often the result of adjustment or adaptation to the syndrome rather than to change in fundamental symptoms. The remaining two cases in which there was marked improvement will not be commented on.


Patients with attacks of irresistible sleep without cataplexy
Patients with attacks of irresistible sleep and cataplexy
Summary of patients with attacks of irresistible sleep without and with cataplexy
Number of cases
Duration of symptoms at time of inquiry (years).

Of the twenty-five patients who reported that their condition was the same as when they were seen at the clinic, eleven had had the condition for ten or more years; in four cases symptoms had persisted for twenty-five, twenty-nine, thirty-five and forty years, respectively. Of the eight patients who reported that their symptoms were worse, there was one whose symptoms dated back twenty years. It is apparent that narcolepsy runs a chronic course without any marked tendency to self limitation.

RESULTS IN CASES TREATED BY EPHEDRINE

Follow-Up Data on Cases Previously Reported.—Our [5] results with the use of ephedrine sulphate in the treatment of six patients with narcolepsy, up to December, 1930, have been published. An effort has been made to keep in touch with these patients. The first

4. Lhermitte, J., and Nicolas, Maurice: Narcolepsie, cataplexie et pyknolepsie, leur intrication chez un même sujet, Gaz. d. hôp. **102**: 585-589 (April 17) 1929. Lhermitte, J., and Roques, A.: L'influence de la ponction lombaire dans la narcolepsie en apparence idiopathique, Rev. neurol. **1**: 93-95 (Jan.) 1929.

5. Doyle, J. B., and Daniels, L. E.: Symptomatic Treatment for Narcolepsy, J. A. M. A. **96**: 1370-1372 (April 25) 1931.

patient, a man aged 20, apparently was completely relieved for several months. Subsequently the drug became less and less effective and his symptoms became more severe. Efforts to adjust the dosage were unsuccessful. Anterior lobe of the hypophysis was given for three weeks without success. In the second case, that of a boy aged 11 years, the medicine continues to be effective in controlling symptoms at the end of nine months. A woman, aged 43, whose case was the third, continues to show marked improvement at the end of nine months. She has an occasional mild cataplectic seizure. This patient usually takes 50 mg. of ephedrine but once daily, at 10 a. m. In the fourth case, that of a man aged 25, there is improvement but not complete relief from taking 75 mg. of ephedrine three times a day. The hypnagogic hallucinations now trouble this patient only when ephedrine is not taken sufficiently late in the evening or when he is excessively fatigued. This man's work necessitates his being active until 2 a. m. The fifth case was that of a woman, aged 57, who was completely relieved with small doses. Six months after she had left the clinic she informed us that she had discontinued treatment in spite of symptomatic relief, because no curative effect was to be expected. The sixth patient, a woman, aged 42, who had had symptoms for twenty-eight years, has been completely relieved for nine months. This patient lives nearby and has been carefully observed. When the use of ephedrine was stopped in April, 1931, for one week, the symptoms of somnolence and cataplexy returned.

TABLE 2.—*Summary of Symptomatic Treatment of Narcolepsy with Ephedrine Sulphate*

Results	Patients Treated by the Authors: Prior to Dec. 1, 1930	Patients Treated by the Authors: Subsequent to Dec. 1, 1930	Patients Seen at Clinic, Treated by Family Physicians	Cases Reported by Correspondence	Cases from the Literature	Totals
Complete relief	2	10	5	3	..	20
Improvement						
Marked	3	5	7	1	1	17
Moderate	0	2	1	3	2*	8
Temporary	1	1	0	0	0	2
Uncertainty	0	0	1	0	0	1
Failure	0	0	1	0	1	2
Totals	6	18	15	7	4	50

* Patients treated by Skaia with ephedrine, hypodermically.

Data on New Cases.—Since submission of our second report for publication, we have treated eighteen additional cases of typical narcolepsy. The results in these eighteen cases are included in table 2. In four of these cases, we have learned that complete relief persists after periods of five months in one, four months in two, and three weeks in one. In six other cases, complete relief was obtained during the period of observation in Rochester, which varied from three to five days; follow-up data are not yet available. One of these six patients did not have cataplexy. Another of these six patients, aged 33, who had had increasingly severe symptoms of Raynaud's disease, involving chiefly the hands, had submitted to cervicothoracic sympathetic ganglionectomy. The symptoms of Raynaud's disease in the upper extremities were relieved, but the attacks of irresistible sleep and of cataplexy to which the patient had been subject for four years before operation were unaffected. The remaining four of these six patients do not require comment.

Marked improvement has been obtained in five cases in which treatment has been given since publication of our second report; in four, this has continued for periods of five months, three months, one month and two weeks, respectively. One of these four patients sleeps occasionally but was completely relieved of cataplexy during a period of three months. The patient who has continued to have relief for a period of one month, another of the four, has never had cataplexy. There is nothing of especial interest in the other two of these four cases. One patient, of the five who were markedly improved, treated recently, has also been relieved of hypnagogic hallucinations. The fifth patient of these five did not present anything of especial interest.

Moderate relief was obtained in two instances. Temporary relief was obtained in one instance (ephedrine seemed to lose its therapeutic effect after the first few weeks of its administration). By "temporary relief" we mean that we have evidence that there was improvement for a time and that this improvement came to an end; it is possible, of course, that in some of the other cases which we have observed for only a short time improvement may eventually prove to be only temporary.

Fifteen patients who had been given a diagnosis of narcolepsy in the clinic were treated at home under the supervision of their family physicians. Five of these patients appear to have been completely relieved. Four of the five patients continued to be relieved after one, two, three and four months, respectively. The remaining patient in this group of five who did not have cataplexy stopped treatment after a short period, owing to unpleasant symptoms attributable to the drug. Seven patients were markedly relieved over periods varying from two to four months. The nocturnal sleep of one of the patients of this group of seven had been disturbed; after the beginning of treatment, sleep became restful and natural. In another case of the seven the spells of weakness have been completely relieved and somnolence is lessened. There is nothing of particular interest in the remaining five cases of this group of seven. Twelve patients of this group of fifteen have been mentioned; three remain. One patient of these three seemed to have been moderately relieved of attacks of irresistible sleep and completely relieved of spontaneous cataplectic attacks. Desiccated thyroid gland was then added, with almost complete relief from symptoms. About two months later, this combined treatment apparently was failing to control the symptoms as well as before. In another instance of the three, the physician reported that treatment with ephedrine had been begun with "uncertain results." Another patient of the three, a boy aged 10 years, not subject to cataplectic seizures, in whose case a diagnosis of questionable encephalitis had been made, and who had been somewhat relieved by taking the leaf of stramonium, was reported to be worse while taking ephedrine and is classified in our data as a failure.

The results of treatment of seven additional cases of narcolepsy were made available to us through the courtesy of the attending physicians. In three instances, complete relief was obtained; in one instance, marked improvement, and in three instances, moderate improvement. One of the three patients of those who were moderately improved previously was unable to work at his occupation of traveling salesman; he was almost completely relieved at first. When he returned to work, his symptoms recurred to a considerable extent but subsequently became ameliorated. Another of the patients who was moderately improved continued to have attacks

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of sleep but was completely relieved of the spells of weakness. In addition, he slept better at night, was wider awake in the intervals between his attacks of sleep, and felt better generally. The condition of the third patient of these three does not require special comment.

Data on Cases Reported in the Literature by Other Authors.—The first patient ever treated by ephedrine was probably Janota's. It would seem that the patient was markedly improved. At the suggestion of Janota, Skala treated two patients with ephedrine, administering the drug hypodermically. The attacks of irresistible sleep appear to have been markedly diminished; the cataplectic seizures were unaffected in the first case and somewhat diminished in severity in the second; Grün [6] has recently reported the results of treatment with ephedrine in a typical case of narcolepsy. The patient, a man aged 60, was given 50 mg. of ephedrine sulphate thrice daily over a period of eight weeks. The patient appeared to derive some slight benefit during the first few days only. This case has been classified by us as a failure. Grün suggested that narcolepsy may be due to a variety of pathologic processes, some of which are uninfluenced by treatment with ephedrine.

COMMENT

As a rule the patients were given ephedrine sulphate in two doses of 25 mg. each, before breakfast and before the noonday meal. In certain instances this dosage sufficed. If it did not suffice, 25 mg. was given as a third dose at 4:30 p. m. The choice of this hour was made in order to avert disturbance of nocturnal sleep. In a considerable number of instances it was necessary to increase the morning, the noon and, in a few instances, even the afternoon dose to 50 mg. In but one instance was 75 mg. given thrice daily. It is to be noted that a few patients have been able to take as little as from 20 to 25 mg. once or twice daily, with almost complete relief from symptoms.

Numerous determinations of the blood pressure have been made. Aside from a slight rise from thirty to sixty minutes after administration, no effect on the systolic or the diastolic blood pressure was recorded. Two patients had essential hypertension; their pressures were not affected by the administration of ephedrine.

One patient who was completely relieved by ephedrine suffered a complete relapse while taking liquid petrolatum for the relief of constipation. When use of the oil was discontinued, he was again completely relieved. This appears to afford clinical corroboration of the fact mentioned by Chen and Schmidt [7] that ephedrine sulphate is not soluble in liquid petrolatum and it may explain certain cases in which the treatment has failed. This patient and another under observation by the same physician have been relieved for eight months.

SUMMARY

A survey was made of information obtained concerning sixty-seven patients who were given a diagnosis of narcolepsy in the clinic and who had not been treated with ephedrine. The duration of the disorder ranged from one to forty years. No patient had recovered completely. Thirty patients wrote that they had improved. In fourteen instances, however, the improvement was very slight. Twenty-five patients reported that they were the same, and eight that they were worse. Two patients had died.

Fifty patients have been treated with ephedrine, including those treated by others as well as those treated by us. To the best of our knowledge, the improvement was a total failure in two instances. Two patients, who at first were improved, no longer appear to receive any effect from the drug. Eight patients have been moderately improved symptomatically. Seventeen patients have made marked symptomatic improvement, and twenty have been completely relieved symptomatically. In the two groups mentioned in the preceding sentence, symptomatic relief continues as follows: in four patients after nine months, in two after eight months, in two patients after five months, in three patients after four months, in six after three months, and in four after two months.

6. Grün, Richard: Beitrag zur Kenntnis der Narkolepsie und der Frage der Dienstbeschädigung bei dieser Krankheit, Ztschr. f. d. ges. Neurol. u. Psychiat. **134**: 155-162 (June) 1931.
7. Chen, K. K., and Schmidt, C. F.: Ephedrine and Related Substances, Medicine **9**: 1-117 (Feb.) 1930.

BISMUTH SUBNITRATE IN THE TREATMENT OF ARTERIOLAR (ESSENTIAL) HYPERTENSION *

DAVID AYMAN, M.D.
BOSTON

Excellent therapeutic results following the use of bismuth subnitrate in 200 patients with arteriolar (essential) hypertension were recently reported by Stieglitz.[1] In the present paper I report unsuccessful results with the drug after its long administration to a small though well studied group of patients with arteriolar hypertension.

THE RATIONALE FOR USING BISMUTH SUBNITRATE IN ARTERIOLAR HYPERTENSION

Stieglitz was prompted to use bismuth subnitrate in arteriolar hypertension after "observation of three cases of nitrate poisoning resulting from the liberal use of bismuth subnitrate in severe diarrheas," [2] together with the observation that "hypotension may occur in normal individuals from excessive administration of bismuth subnitrate for diarrhea." [3]

It should, of course, be borne in mind that low blood pressure occurs in many cases of severe diarrhea, chiefly as a result of the great loss of fluid through the bowel with consequent reduction of blood volume.[3] The administration of bismuth subnitrate to these patients with diarrhea may therefore have been coincidental to, rather than the cause of, the hypotension. Even in the hypertensive patient, severe diarrhea may lower the blood pressure.[4]

Stieglitz [5] believes that the nitrate radical of bismuth subnitrate is changed into nitrites by bacteria in the intestine, that the nitrites are there absorbed into the blood stream, producing the hypotensive effect of the nitrites, and that finally some of the nitrites appear in the urine, giving slightly positive nitrite tests. The presence of slightly positive nitrite tests of the urine, however, does not lend great support to this conception, because positive nitrite tests of the urine, especially

* From the Medical Department, Dr. Joseph H. Pratt, physician-in-chief, and from the Department of Clinical Research, Boston Dispensary.
1. Stieglitz, E. J.: Bismuth Subnitrate in the Treatment of Arterial Hypertension, J. A. M. A. **95**: 842 (Sept. 20) 1930; Arterial Hypertension, New York, Paul B. Hoeber, Inc., 1930.
2. Stieglitz, E. J.: Bismuth Subnitrate in the Therapy of Hypertension, J. Pharmacol. & Exper. Therap. **32**: 23 (Nov.) 1927.
3. Friedlander, A.: Hypotension, J. Med. **9**: 13 (March) 1928.
4. Ayman, David: The Early Diagnosis and Early Treatment of Essential Arteriolar Hypertension, New England J. Med. **205**: 424 (Aug. 27) 1931.
5. Stieglitz, E. J.: The Pharmacodynamics and Value of Bismuth Subnitrate in Hypertension, J. Pharmacol. & Exper. Therap. **34**: 407 (Dec.) 1928.

in the presence of nitrates, may occur normally [6] unless the urine is collected and kept under sterile conditions. Even then the freshly passed urine examined at once may occasionally contain nitrites.

Regardless of these controversial points, the practical and important question is whether bismuth subnitrate does not lower the blood pressure in arteriolar (essential) hypertension.

MATERIAL AND METHOD OF PRESENT STUDY

The accompanying table indicates that the present study was carried out in a group of fifteen carefully studied and controlled patients. In every case, in addition to the usual clinical examination including examination of the ocular fundi, which I made personally, the following studies were carried out: a 7 foot orthodiagram; an electrocardiogram; an examination of the ocular fundi by Dr. Joseph H. Skirball, chief of the opthalmic service, who made and recorded his fundus studies half years. The patients were observed by me personally for a long period before treatment with bismuth subnitrate, averaging twenty and a half months of observation per patient, during which period each patient made an average of thirty-five visits. I myself made all the readings of the blood pressure during this study. At each visit the patients were seated in a quiet room, and the readings before, during, and at the end of a twenty-minute sitting rest period were all recorded.[7] Eight of the fifteen patients have been observed by me in a previous study of the effect of potassium thiocyanate in essential hypertension.[8] However, in these eight cases an average interval of fifteen and eight-tenths months had elapsed between the treatment by thiocyanate and the treatment reported here, and during this interval an average of twenty-five visits was made by each patient, so that there can be little possibility of any persisting effect of the thiocyanates.[9] In fourteen of the fifteen cases, studies

Analysis of Fifteen Cases of Arteriolar (Essential) Hypertension Treated with Bismuth Subnitrate *

Case †	Age	Heart Enlargement by Orthodiagraph	Electrocardiographic Changes, Degrees	Changes in Retinal Blood Vessels	Renal Function Impairment	Duration of Hypertension as Known by Patient, Years	Length of Observation in Clinic Before Present Treatment, Years	Length of Observation by Author Before Present Treatment, Months	Number of Visits Made During Observation by Author Before Present Treatment	Case Number as Referred to in Previous Thiocyanate Study ‡	Length of Observation After Thiocyanate and Present Treatment, Months	Number of Visits During Observation Recorded in Preceding Column	Effect on Blood Pressure, Solely, of Frequent Visits	Effect on Blood Pressure of Amyl Nitrite, etc.	Dose of Bismuth Subnitrate, Gm.	Number of Days Bismuth Subnitrate Was Given	Number of Visits During Bismuth Subnitrate Treatment	Effect of Bismuth Subnitrate on Blood Pressure Level
1 ♀	64	++	+20	+++	—	5.1	2.1	20.0	33	..	..	..	+	+++	(0.65) t.i.d.	275	7	0
2 ♀	45	+	+35	++	—	6.8	6.8	31.0	57	6	14	17	..	+++	(0.65) t.i.d.	118	3	0
3 ♀	59	—	—	+++	—	7.0	3.0	21.0	45	4	13	13	+	++	(0.65) t.i.d.	175	7	0
															(0.32) t.i.d.	42		
4 ♂	49	++	+30	++	—	5.0	5.0	14.0	10	..	..	..	..	+++	(0.65) t.i.d.	150	5	0
5 ♀	66	+	—	+++	—	5.8	3.6	25.5	58	7	18	24	+	..	(0.65) t.i.d.	255	9	0
6 ♀	54	+	..	+++	—	3.0	3.0	29.3	51	7	14.7	24	+	+++	(0.65) t.i.d.	139	7	0
7 ♀	58	+	— 4	+++	—	4.2	1.2	10.0	16	..	..	..	+	+++	(0.65) t.i.d.	140	6	0
8 ♀	51	++	+24	+++	—	3.0	1.6	14.7	13	..	..	..	..	..	(0.65) t.i.d.	153	5	0
9 ♀	49	+	+24	++	—	15.0	15.0	7.5	8	..	..	..	..	+++	(0.65) t.i.d.	86	5	0
															(0.32) t.i.d.	56		
10 ♀	61	+	..	++	—	10.0	10.0	24.0	10	..	..	..	..	..	(0.65) t.i.d.	130	4	0
11 ♂	55	—	—	+++	+	1.5	1.2	3.0	8	..	..	..	+	+++	(0.65) t.i.d.	58	3	0
12 ♂	70	++	+ 6	+++	—	7.6	2.6	23.5	58	3	18	24	+	..	(0.65) t.i.d.	44	3	0
13 ♀	49	+	—	+++	—	7.5	6.8	29.5	59	5	16	25	..	..	(0.65) t.i.d.	50	2	0
14 ♂	52	+	—	+++	—	5.6	3.6	26.5	57	1	18.5	35	+	..	(0.65) t.i.d.	5	1	0
15 ♂	47	—	..	—	—	2.0	2.0	22.0	36	..	14	18	..	..	(0.65) t.i.d.	91	8	0

* In this table, + indicates slight narrowing of retinal arterioles, slight cardiac enlargement, slight renal damage, or a definite lowering of the blood pressure level solely by frequent visits; ++ indicates moderate narrowing of the retinal arterioles, moderate cardiac enlargement, or close approach of the blood pressure to normal after amyl nitrite inhalation or two drops of spirit of glyceryl trinitrate sublingually; +++ indicates marked narrowing of the retinal arterioles or drop of the blood pressure to normal after amyl nitrite inhalation or spirit of glyceryl trinitrate sublingually; the electrocardiographic changes indicate the degree of axis deviation as determined by Einthoven's method; cardiac enlargement was determined with the aid of Otten's tables; — indicates within normal limits.

† In this column, ♂ denotes male; ♀, female.

‡ Included through the courtesy of Dr. Falcon-Lesses, who made all the observations in this case (in a manner similar to my own).

without knowledge of the clinical history of or observations on the patients;[7] a study of the renal function by means of dilution and concentration tests; microscopic study of urinary sediment; a phenolsulphonphthalein test, and the blood urea nitrogen. The results of these studies indicated moderate to marked arteriolar changes in fourteen of the fifteen cases, although all except case 11 had excellent renal function. Case 15 was the only one in which no demonstrable clinical evidence of arteriolar changes could be found. Although twelve of the fifteen patients showed slight to moderate cardiac enlargement, and only one (case 2) had serious abnormality by electrocardiogram (inverted T waves in leads 1 and 2), none of them had symptoms or signs of cardiac failure. The table further shows that on an average the patients in this study knew they had high blood pressure for six years and had been under observation in the clinic for an average of four and a

were made concerning the effect of giving some obviously ineffective medicine, such as a few drops of diluted hydrochloric acid or some pink-colored water daily for months. The results were similar to those previously reported;[10] namely, moderate relief of some symptoms but no effect on the blood pressure. This relief of symptoms has been considered as due to the action of suggestion (inherent in any type of treatment) on hypertensive patients whose symptoms are so frequently of psychic origin.[11]

Another control procedure carried out on eight of the fifteen patients was the determination of the effect solely of frequent visits without any medication, and in all the cases it was found that the blood pressure was

6. Salin, E. B.: Ueber Vorkommen und klinische Bedeutung von Nitriten im Urindes Menschen, Acta med. Scandinav. **63**: 369, 1926.

7. Ayman, David: Normal Blood Pressure in Essential Hypertension, J. A. M. A. **94**: 1214 (April 19) 1930.

8. Ayman, David: Potassium Thiocyanate in the Treatment of Essential Hypertension: Its Impracticability, J. A. M. A. **96**: 1852 (May 30) 1931.

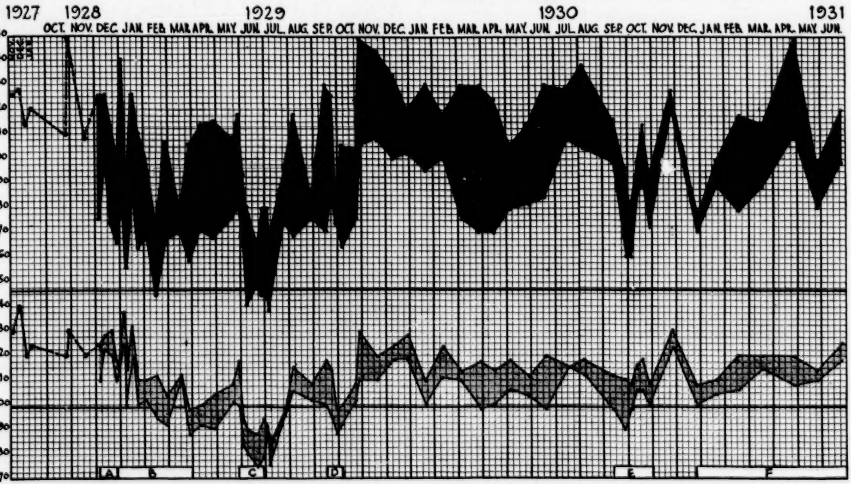
9. Westphal, K., and Blum, R.: Die Rhodantherapie des genuinen arteriellen Hochdrucks und ihre theoretische Begründung, Deutsches Arch. f. klin. Med. **152**: 331 (Oct.) 1926.

10. Ayman, David: The Evaluation of Therapeutic Results in Essential Hypertension: I. The Interpretation of Symptomatic Relief, J. A. M. A. **95**: 246 (July 26) 1930.

11. Ayman, David; and Pratt, J. H.: Nature of the Symptoms Associated with Essential Hypertension, Arch. Int. Med. **47**: 675 (May) 1931.

lower during the period of frequent visits than when these eight patients were seen at less frequent intervals. This effect of frequent visits has been interpreted as due to the development of more intimate and informal relations between physician and patient, thereby eliminating the hypertensive effect of the tension of the consulting room.[12] However, since bismuth subnitrate is a relatively nontoxic drug that may be taken, as was done in this study, for as long as four to six weeks at a time without observation, the effect of frequent visits did not complicate the evaluation of results in the present study. Therefore, any definite effect on the blood pressure while the patient was taking bismuth subnitrate would most probably be due to the drug.

Finally, another important control procedure was employed for eight of the fifteen patients; namely, the determination of the effect on the blood pressure of inhaling amyl nitrite for a few seconds or of taking



Blood pressure readings in case 5 from November 1927, to June, 1931. The two horizontal bands show the upper normal limits for systolic and diastolic blood pressure according to insurance statistics. The upper black curves show systolic variations not only from visit to visit but also at each visit (the latter variation is shown by the vertical distance between the two dots representing the same visit). The lower two curves show the same for the diastolic blood pressure, but are more lightly blocked, in order to present the individual visits more clearly. During that part of the curve marked by period *A*, the only medication was eight drops of diluted hydrochloric acid three times daily; during period *B*, potassium thiocyanate, 0.1 Gm. (1½ grains), three times daily was given; during period *C*, potassium thiocyanate, 0.2 Gm. (3 grains), four times daily was given; during period *D*, eight drops of dilute hydrochloric acid three times daily was prescribed; during period *E*, pink-colored water was given, and during period *F*, bismuth subnitrate, 0.65 Gm. (10 grains), three times daily was given.

sublingually two drops of the spirit of glyceryl trinitrate (containing approximately one-fiftieth grain of glyceryl trinitrate).[13] All the patients on whom this was tried exhibited a precipitous drop in blood pressure to normal or lower, and then a quick rise to the initial level. Therefore these patients, according to Stieglitz's[14] interpretation, have comparatively little injury to the arterioles and are the type of hypertensive patients who respond very well to the "minute quantities of nitrite ions" which Stieglitz believes are absorbed from the intestine after bismuth subnitrate is taken.

12. Ayman, David: The Evaluation of Therapeutic Results in Essential Hypertension: II. The Interpretation of Blood Pressure Reductions, J. A. M. A. **96**: 2091 (June 20) 1931.
13. Kauffmann, F.: Klinische experimentelle Untersuchungen zum Krankheitsbilde der arteriellen Hypertension, Ztschr. f. d. ges. exp. Med. **42**: 473, 1924. Stieglitz, E. J.: Arterial Hypertension: Evaluation of the Prognosis, Arch. Int. Med. **46**: 227 (Aug.) 1930.
14. Stieglitz (footnotes 1 and 13).

DOSAGE OF BISMUTH SUBNITRATE

During part of the course of treatment the patients received the drug made by Parke, Davis & Co., and during the remaining part of the treatment they were given the drug made by John Wyeth and Brothers. The drug used in the present study was dispensed in pill form. Stieglitz has stated in a personal communication that he has "intentionally avoided administering the bismuth subnitrate in pill form, for with compressed pills the salt is too insoluble to break down. For that reason it has been prescribed in capsules, where the powder is loose." After receipt of this communication, a sample of the pills used in the present study was examined, and it was found that the pills, at least those made by the aforementioned companies, were so loosely compressed that they crumpled easily on handling, and became a soft, semiliquid mush almost immediately after contact with saliva or water. Since (1) pills are usually swallowed together with a sip of water, (2) there is normally from 20 to 50 cc. of gastric juice in the stomach, and (3) the drug is stated to be soluble in hydrochloric acid, the pill form seems a satisfactory state in which to use the drug.

Thirteen of the fifteen patients were given 0.65 Gm. (10 grains) three times a day, while two patients received 0.33 Gm. (5 grains) three times a day during part of the course of treatment, as shown in the table. Nine patients received the drug over periods ranging from 130 to 180 days; three patients took it from 90 to 275 days; two patients took it for 58 and 50 days, respectively, and one patient stopped the drug at the end of 5 days because of "untoward symptoms."

RESULTS

The chart illustrates the method of control and study used for all the patients, and the results obtained.

During period F, while bismuth subnitrate was taken by the patient for six months, the blood pressure was not affected to the slightest degree demonstrable. On the other hand, during period C the blood pressure was lowered by the thiocyanates; during period D it was lowered by frequent visits; during period E it was lowered by frequent visits plus pink-colored water, and at all times it was lowered by sitting rest periods. A similar study of the other fourteen cases showed absolutely no demonstrable effect of the bismuth subnitrate on the blood pressure.

It must be borne in mind that although the accompanying chart or any similar chart apparently presents the blood pressure readings of a patient during three and a half years of observation, it in reality only shows the blood pressure readings taken during each of sixty-six visits to the clinic, a very small part of the three and a half years, for the straight lines connecting each visit must be arbitrary, merely showing apparent tendencies of the blood pressure level.

There was no effect on the symptoms other than what might be attributed to the pure suggestion supplied with any therapy. Seven of the patients were symptomless at the start of the study.

"UNTOWARD" SYMPTOMS DURING THERAPY

During the course of treatment, three of the fifteen patients manifested "untoward" symptoms which may have been purely coincidental to, rather than caused by, the administration of the drug. Stieglitz has reported no reactions in his studies. In case 5 of the present study the patient stated that on the seventy-seventh day of treatment severe pain in the left upper quadrant of the abdomen appeared, which lasted for one hour, during which time she was unable to urinate. This disappeared and did not recur despite continuation of the drug. In case 6, on the hundred and thirty-ninth day of treatment the patient complained of rising to urinate two or three times a night during the preceding week, of difficulty in urinating, of pain after urination and of the appearance of blood in the urine. There was no fever. A catheter specimen of urine contained 80 erythrocytes and 10 leukocytes to the high-power field, but no albumin or casts. Cystoscopic examination disclosed "diffuse congestion of the entire bladder mucosa." Pyelograms of the kidney did not reveal abnormality. The symptoms disappeared one week after the bismuth subnitrate was discontinued. In case 14 the patient complained of anorexia, constipation, marked restlessness and insomnia on the second day after taking the drug. He appeared very upset and felt certain that some mistake had been made in dispensing the drug. However, after he was given a new package of the drug, the same symptoms developed and he refused to take any more of it. In this case it was possible that the symptoms were of purely psychic origin, because previous distressing symptoms from treatment with thiocyanate may have caused him to fear any further therapy.

Only three patients (cases 3, 5 and 6) found that the bowels were slightly more constipated while they were taking the drug than before treatment.

SUMMARY OF RESULTS

Bismuth subnitrate given in doses of 2 Gm. (30 grains) daily for periods of from three to nine months had no demonstrable effect on the blood pressure of fifteen carefully studied and controlled patients with arteriolar (essential) hypertension.

484 Commonwealth Avenue.

LIPODYSTROPHY

A REPORT OF SIX CASES IN CHILDREN *

A. H. PARMELEE, M.D.
OAK PARK, ILL.

Lipodystrophy is defined by Coates [1] as a "disease especially liable to affect children 5 to 8 years of age, in which characteristically there is a loss of subcutaneous fat of the face, neck, thorax, arms and abdomen, without assignable cause or gross symptoms of ill health. In association with this, there is in addition, in females, an increase of subcutaneous fat below the iliac crests."

Like many other diseases, it remained obscure until attention had been sufficiently attracted to it by case reports in the medical periodicals. Thus in 1917, J. Parkes Weber [2] summarized twenty-seven cases including his own reported to that date, while in 1924, Reuben, Zamkin and Fox [3] found sixty cases recorded and Coates in 1925 summarizes sixty-three cases. In 1927, eight case reports were found and there have been at least five cases reported in children under 14 years since 1927. Barraquer reported the first authentic case in 1906. Campbell described a case in 1907. However, Osler had records of a case seen by him in 1895, and permitted Weber [4] to report it along with his own cases in 1917. In 1911, Arthur Simons reported a case he had studied carefully and gave the name lipodystrophia progressiva to the disease. The first case reported in this country was by Herrmann [5] in 1916.

The outstanding features are the thin, almost cadaverous looking face and upper part of the trunk, while the lower part of the trunk and the legs look either normally or better than normally well nourished. Also, there is no loss of muscular power nor disturbance of sensation over the parts affected, and the individual is active and strong and well in every other respect. Although the face often appears pale, no anemia can be demonstrated. The onset is usually in young childhood. Thirty-nine of the sixty-three cases recorded by Coates had their onset before or in the eighth year, the youngest patient being two years of age. Forty-six patients were 10 years of age or younger. The age was not recorded in eight cases, so it is fair to assume that at least 82 per cent were 10 years of age or younger when symptoms began, and the great majority of these were between 6 and 8 years.

In this series also there were forty-two females and twenty-one males, or a preponderance among females of 2 to 1. It was at first thought to be a disease peculiar to females, but in 1916 Gertsmann [6] and again in the same year Gerhartz [7] reported each a case in a male. Since then, numerous cases have been reported and the preponderance of female cases is getting steadily less.

Four of the cases reported below came to the pediatric ward of the Presbyterian Hospital on the service of Dr. C. G. Grulee, and I am indebted to him for the privilege of studying and reporting these cases.

REPORT OF CASES

CASE 1.—*History.*—M. O., a girl, aged 10 years, first consulted me, Oct. 16, 1925. Her complaint was that her face

* Read before the Society of Internal Medicine of Chicago (except case 6), Feb. 28, 1928.

1. Coates, V.: Brit. J. Child. Dis. **22**: 194 (July-Sept.) 1925.
2. Weber, F. P.: Brit. J. Child. Dis. **14**: 81-93 (April-June) 1917.
3. Rueben, Zamkin and Fox: Lipodystrophie Progressiva, Arch. Pediat. **41**: 480, 1924.
4. Weber, J. P.: Brit. J. Child. Dis. **14**: 179 (July-Sept.) 1917.
5. Herrmann, Charles: Progressive Lipodystrophy, Arch. Int. Med. **17**: 516 (April) 1916.
6. Gertsmann, J.: Wien. klin. Wchnschr. **30**: 1209 (Sept. 21) 1916.
7. Gerhartz, H.: München. med. Wchnschr. **63**: 823, 1916.

was thin and pale. The parents first noticed that she was getting thin in the face and neck a few months after the removal of her tonsils four years before; i. e., when the child was 6 years old. This condition had become gradually more marked until within the last year it seemed to have become stationary. There was no other complaint; her appetite was good, she played normally and vigorously and did not tire easily, and she slept well, did well in school, and in every way acted like a healthy normal child. She had gained 7 pounds (3.2 Kg.) during the past year.

She was the second child of healthy parents. The mother's pregnancy was normal, as was her labor. The child's birth weight was 8¼ pounds (4 Kg.). She was breast fed for eight months, did well through infancy and developed normally as to teething, walking, talking, and so on. She had whooping cough at the age of 3 years, chickenpox at 4 years, measles at 4 years, and mumps at 8 years. When she was about 3 years old, she had influenza and had frequent earaches but never a discharging ear; she had had no earache since the tonsillectomy at the age of 6 years. In the family history there was nothing of significance.

Examination.—When seen before removing her clothes, she gave the impression of a sick child; the face was very thin, the cheeks were sunken, there were wrinkles about the mouth and chin, the cheek bones were prominent, the eyes were sunken, and there was a peculiar pallor that was ghastly. When the clothes were removed she was seen to have a well nourished and perfectly normal appearing body from the clavicles down. The abdomen, hips and legs were especially

Fig. 1 (case 3).—Patient (the child on the left) at the age of 7.

well covered with fat but not abnormally so. The thickness of the subcutaneous fat on the chest, arms and abdomen seemed normal but was entirely lacking on the neck, face and scalp. A thorough physical examination revealed nothing abnormal except as already described.

At the Presbyterian Hospital, our investigations revealed the following data: Pirquet reaction, negative; blood Wassermann reaction, negative; urine, entirely normal; blood count showed: red blood cells, 4,500,000; white blood cells, 12,000; polymorphonuclear neutrophils, 67 per cent; eosinophils, 2; basophils, 1; small mononuclears, 23; large mononuclears, 4; no abnormal cells; hemoglobin, 85 per cent. Chemical analysis of the blood revealed: urea, 22; uric acid, 2.4; creatinine, 1.15; total nonprotein nitrogen, 24; blood sugar, 102; blood calcium, 10.8. The basal metabolic rate was —7. A roentgenogram of the skull showed a normal sella. Neurologic examination by Dr. Peter Bassoe revealed nothing pertaining to the nervous system and his comment was: "The striking feature is the deficiency of subcutaneous fat in the face and neck, while the muscles are strong."

CASE 2.—*History.*—J. F., a girl, aged 7½ years, entered the Presbyterian Hospital, Feb. 26, 1926, in the service of Dr. Grulee, with the following complaint: thin face, nervousness, and failure to gain in weight. For the past three and one-half years, i. e., since the child was 4 years old, the mother had noticed that, in spite of a good appetite, plenty of good food and plenty of sleep, the child appeared to become gradually thinner and thinner. This condition the mother dated back to a severe attack of tonsillitis at the age of 4 years, since which time the patient had had repeated attacks of tonsillitis until nine months previously, when the tonsils were removed. She was very active, played vigorously and seemed well but tired rather easily. In school she received good grades.

Fig. 2 (case 3).—Appearance at age of 10.

She was the second child of healthy parents. She had one older sister and one younger sister, both living and well. The mother had had several miscarriages since the last child. The patient was born six weeks prematurely and weighed 4¼ pounds (2 Kg.). She was breast fed for four months and did well through infancy, developing normally in every way. Until she was 4 years old she appeared normal. She had whooping cough at 1½ years, chickenpox at 3 years and follicular tonsillitis at 4 years. The family history was without significance except that the mother's father died of tuberculosis, as did also a half sister.

Examination.—The child did not appear ill but looked extremely thin in the face and upper part of the trunk, while the rest of her body was moderately well nourished. The contrast was striking. There were wrinkles about the mouth, and the cheeks were sunken. There seemed to be no subcutaneous fat in the face, neck, upper part of the chest and upper arms, but the abdomen and legs seemed to be normally padded. Thorough physical examination did not reveal anything abnormal except a systolic murmur heard best over the heart apex. A roentgenogram of the chest showed enlargement of the tracheobronchial lymph glands. There were no neurologic observations, and muscle power seemed everywhere to be normal. The temperature ranged between 98 and 99.4 during the four days she was in the hospital, and the pulse rate was from 80 to 100. The Pirquet reaction was positive; the Wassermann reaction of the blood was negative; the urine was entirely normal. The blood count gave the following results: red blood cells, 5,580,000; white blood cells, 10,300; polymorphonuclear neutrophils, 40 per cent; eosinophils, 3; small mononuclears, 20; large mononuclears, 37. No abnormal cells were seen. The hemoglobin was 99 per cent. Chemical analysis of the blood showed: urea nitrogen, 17.7; uric acid, 3.08; creatinine, 1.32; total nonprotein nitrogen, 37.2; blood sugar, 93; blood chlorides, 495. The basal metabolic rate was —12.

CASE 3.—*History.*—J. P., a girl, aged 10 years, entered the Presbyterian Hospital, March 4, 1926, in the service of Dr. Grulee. The only complaint was thinness of the face and

chest. For the past two and one-half years the mother had noticed that the child was getting thin, especially in the face. This was first noticed shortly after a tonsillectomy. In spite of a good appetite and gradual gain in weight, the thinness of the face gradually became more marked. The patient had always seemed to feel well, played actively, slept well and got along well with other children, except that lately they had been poking fun at her on account of her thin face, which looked so old and haggard. She was bright and did good work in school.

Fig. 3 (case 4).—Patient at age of 8.

She was the second child of healthy parents, born normally, at full term; her birth weight was 8½ pounds (3.8 Kg.). She was breast fed until 1 year old, and developed normally in every way. There were two other children, one aged 12 years and one 8 years, both in good health. At 2½ years she had an attack of bronchitis, at 3 years chickenpox, at 4 years measles and mumps, and at 7 years tonsillitis. In the family history there was nothing of significance.

Examination.—There was apparent absence of subcutaneous fat in the face, while the markings and actions of all the muscles were present. The arms and trunk had an emaciated appearance, while the muscles were well preserved. The abdominal wall was about normal in appearance and there seemed to be a fair amount of subcutaneous fat in the gluteal region and the lower extremities. There was perhaps a slight excess of fat in the upper part of the thighs. The muscle power seemed to be everywhere normal and the reflexes were all normal. Careful examination did not reveal anything unusual or abnormal further than already described. The Pirquet reaction was positive; the blood Wassermann reaction was negative; the urine was entirely normal. The blood count showed: red blood cells, 5,630,000; white blood cells, 20,200; polymorphonuclear neutrophils, 77 per cent; basophils, 1; small mononuclears, 11; large mononuclears, 21. No abnormal cells were noted. The hemoglobin was 99 per cent. Chemical analysis of the blood revealed urea nitrogen, 18.74; uric acid, 3.55; creatinine, 1.32; total nonprotein nitrogen, 37.72; blood calcium, 10.42. The basal metabolic rate was —7. A roentgenogram showed a normal sella.

CASE 4.—*History.*—R. K., a girl, aged 8 years, entered the Presbyterian Hospital, in the service of Dr. Grulee, April 25, 1927. The only complaint was that she was thin in the face. Until two years ago, the mother stated, she was normal in appearance, but since then her face had been getting gradually thinner and more wrinkled; now the neck and upper part of the chest was also becoming thin. Her appetite was fair and she felt well and was active. There had been no loss of weight.

She was the ninth child, and she had been born at full term, after prolonged but spontaneous delivery. The birth weight is not known. She was breast fed for one year. She developed normally. At 1 year she had smallpox and at 5½ years measles; she has had frequent colds and has had a chronic suppurative otitis media for two years. Tonsillectomy was performed at 7 years. The father died at the age of 40 of influenza. The mother, aged 49, was living and well. Six other children were living and well. Two died of pneumonia following measles.

Examination.—The appearance was striking, for the face and neck and upper portion of the chest were very thin, and the remainder of the body seemed well nourished. The cheeks were sunken and the cheek bones prominent. When she smiled there were wrinkles about the mouth and on the chin. Added to this the face was badly scarred as the result of smallpox. The muscles of the face and neck and chest stood out plainly and seemed normally strong. The lower part of the trunk and the legs seemed well padded with fat. The deep and superficial reflexes were all normal, and there was no disturbance of cutaneous sensations. Further examination showed purulent discharge from the right ear and slight cervical adenopathy. The spleen was palpable. There were no other observations of significance.

A roentgenogram of the chest showed enlarged tracheobronchial glands. The Pirquet reaction was very strongly positive; the blood Wassermann reaction was negative; the urine was entirely normal. The blood count showed: red blood cells, 5,040,000; white blood cells, 8,200; neutrophils, 68 per cent; small mononuclears, 24; large mononuclears, 8. No abnormal cells were noted. The hemoglobin was 88 per cent. Chemical analysis of the blood gave the following results: urea nitrogen, 10.9; uric acid, 4.1; creatinine, 1.3; total nonprotein nitrogen, 31.4; cholesterol, 159.2. The basal metabolic rate was —5. The blood calcium was 10.21; the blood sugar, 86.9; carbon dioxide, 52.2 per cent by volume.

CASE 5.—*History.*—W. Van H., a girl, aged 9¾ years, entered the Presbyterian Hospital, Nov. 16, 1927, in the service of Dr. Grulee. She had been visiting the Central Free Dispensary because of some abdominal pain, and the mother said that she was gaining in weight slowly and was worried about her face looking so very thin. The only other complaint was that she seemed to tire easily. In every other way she seemed to be normal, had a good appetite, played vigorously, slept well, and got on well in school.

Fig. 4 (case 4).—Appearance at age of 8. Note the wrinkles about the mouth.

For the past two years her face had been getting gradually thinner and thinner. The mother and father were well and had four other children, all of whom were well. One child had died at the age of 4 days from a congenital atresia of the esophagus and a congenital heart defect. The mother was well while carrying the present patient and had a normal labor, and the infant was normal at birth. She was breast fed for three months, did well during infancy and developed normally in every way. At 9 months she had scarlet fever

and at 7 years measles and whooping cough. Her tonsils were removed at 8 years. She had had some head colds but no other acute illnesses. In the family history there was nothing significant.

Examination.—The striking feature was the very thin face in contrast to the fairly plump and well nourished trunk and lower extremities. The face looked sallow and wrinkled and old; the cheeks were sunken, there were wrinkles about the mouth and eyes, which showed up strikingly when she smiled. Only a little subcutaneous fat could be felt on the face and neck and only a little more over the upper part of the chest and arms, but from the costal margins down there seemed to be a normal amount of it. The muscles of the face were normal in power; the jaw reflex was present and normal. The same was true of the muscles of the arms and thorax. The deep and superficial reflexes elsewhere were normal. The thyroid gland was but slightly enlarged. Further careful examination did not reveal any abnormalities or signs of disease.

Fig. 5 (case 5).—Patient at the age of 9¾ years.

The Pirquet and the blood Wassermann reactions were both negative. The blood count gave the following results: red blood cells, 4,800,000; white blood cells, 10,900; neutrophils, 60 per cent; small mononuclears, 38; large mononuclears, 2. No abnormal cells were noted. The hemoglobin was 80 per cent. The urine was entirely normal. Chemical analysis of the blood revealed urea nitrogen, 10.7; uric acid, 3.8; creatinine, 1.4; total nonprotein nitrogen, 30.2; blood phosphorus, 4.06; blood calcium, 10.7; blood cholesterol, 142.2; blood sugar, 90.9; blood chlorides, 480; carbon dioxide, 56 per cent by volume. A roentgenogram of the long bones did not show any evidence of disturbance of bone growth. The basal metabolic rate was —19.

CASE 6.—*History.*—R. S., a girl, aged 10½ years, was brought to me, May 3, 1928, with the complaint that for the last four years she had been thin and that in spite of a good appetite she was becoming thinner. There were no other complaints, except that she had vague pains in the stomach at times.

She was the second child of healthy parents. The mother's pregnancy was normal, as was her labor. The infant seemed normal at birth and weighed 8 pounds (3.6 Kg.). She was normal through infancy, developing normally and having no illness. At 3 years she had a very severe attack of pharyngeal diphtheria, and the mother thought that she had never seemed quite as sturdy since then. Her tonsils and adenoids were removed when she was 4; at 5 she had measles and whooping cough.

Examination.—The face was thin and sallow, with wrinkles about the mouth. There seemed to be a complete absence of subcutaneous fat in the face, neck, upper part of the thorax to just below the clavicles, and to about the middle of the upper arms. The remainder of the body seemed to be quite normally padded with fat. There was no disturbance of muscular power; the reflexes were all normal, and there was no disturbance of the sensory nerves. All other physical conditions were entirely normal. Her weight was 66¾ pounds (30.2 Kg.) and her height 53½ inches (136 cm.).

Laboratory observations at the Presbyterian Hospital were as follows: blood: hemoglobin, 75 per cent; red blood cells, 4,570,000; white blood cells, 7,500; differential count: neutrophils, 53 per cent; small mononuclears, 39; large mononuclears, 3; eosinophils, 5. Urinalysis was negative. The stools were normal. The basal metabolic rate was —12 (Du Bois). The Pirquet and the Wassermann reactions were negative.

Absolutely no clue to the etiology of this strange disease is as yet at hand, though many writers have indulged in interesting speculations. Some, as would be expected, strongly favor some endocrine disturbance. Feer, for instance, inclines toward a thyroid dysfunction as the most plausible cause. To others[8] the distribution of the fat atrophy stands in the way of accepting the endocrine theory. Simons refers to it as "a sister of the muscular dystrophies" and considers it most likely a trophoneurosis. Weber suggests a disturbance of the vegetative nervous system with redistribution of fat in the subcutaneous tissues analogous to that of pigment in the skin in vitiligo.

The relationship of one case to osteogenesis imperfecta suggests a developmental error in the mesenchyme. This idea with variations has been suggested by several. Such diseases as syphilis and tuberculosis seem definitely to have been ruled out.

Klien reported a case in which loss of fat of the face and chest followed a street car accident that had caused a severe head injury. In this case there were several symptoms referable to either vasomotor or endocrine disturbances; i. e., rhinorrhea, polyuria and hypertrichosis. This investigator finds definite evidences of vasomotor disturbances in eleven of the case

Fig. 6 (case 5).—Patient at age of 9¾ years.

reports then at hand, and from this suggestion he propounds the following explanation as a possibility:

A center controlling fat distribution is assumed to exist in the subthalamic portion of the midbrain, which is intimately connected with the pineal gland through sympathetic nerve fibers. A localization of control for

8. Klien, H.: München. med. Wchnschr. **68**: 206-208 (Feb. 18) 1921.

definite segments of the body, either in the center or in the pineal gland would explain the segmental distribution of fat atrophy or hypertrophy, depending on the location of changes in these structures. In lipodystrophia, the disease starts most frequently at about the sixth year or shortly thereafter. It is also true that processes of involution begin in the pineal gland at about the sixth year; much of the gland substance disappears, and cysts, glia plaques, and the like develop. One might assume that, if a certain part is especially affected, it in turn would so influence a certain part of the center as to cause fat atrophy in only the upper part of the body. It has also seemed to others that the distribution of the fat atrophy must be explained on a neurologic basis. Wolff and Ehrenclou [9] report a case of facial hemiatrophy and hemiatrophy of the tongue together with lipodystrophia, a perversion of sensation and a peculiar affective state. They conclude that the facial hemiatrophy is merely the outstanding feature of a syndrome of general autonomic imbalance resulting from deranged central trophic control. They call attention to such derangements following encephalitis giving rise to obesity, alterations in respiratory rhythm, diabetes insipidus, and so on. These conditions point toward the midbrain and that part of it known to be often profoundly affected by encephalitis; i. e., the thalamic and subthalamic area. The possibility has been suggested [10] of an "encephalitis" infection or toxin involving this area directly or indirectly through the effects of disease on the vasomotor apparatus.

I have gone into this speculation as to etiology more in detail because in the six cases here reported the onset seemed definitely to have followed some trauma to or infection of the nasopharynx, and in the reported cases there are thirteen in which the onset dated from such conditions as measles, pertussis, influenza, pneumonia, tonsillitis, tonsillectomy, and otitis media. In my cases, two followed tonsillectomy, one tonsillitis, one measles, one measles and pertussis, and one diphtheria, measles, pertussis and tonsillectomy. The close relationship of infections of the upper respiratory tract to encephalitis with its favorite localization in the midbrain suggests strongly the possibility, at least that there may be some etiologic connection in this disease.

The question of etiology is handicapped by the fact that these patients do not die of this disease and to date records of only two autopsies are at hand: Husler's [11] case and one reported by Weber and Gunewardene.[12] In neither of these was there any definite clue to the cause of the disease. Biopsy reports by several authors show a complete absence of subcutaneous fat, with only a few fat globules in the sebaceous glands.

SUMMARY

Six cases of lipodystrophy in children are reported. In all, the loss of subcutaneous fat was first noticed soon after a definite and severe infection of the upper respiratory tract or tonsillectomy.

None showed any laboratory or clinical evidence of disturbance of the endocrine glands.

Emphasis is laid on the possibility that toxic or infectious derangement of central trophic centers in the thalamic and subthalamic areas of the midbrain may be the main etiologic factor.

715 Lake Street.

9. Wolff, H. G., and Ehrenclou, A. H.: Trophic Disorders of Central Origin, J. A. M. A. **88**: 991-994 (March 26) 1927.
10. Von Wartenberg, R.: Arch. f. Psychiat. **74**: 663, 1925.
11. Husler, J.: Ztschr. f. Kinderh. **10**: 116, 1914.
12. Weber, F. P., and Gunewardene, T. H.: Brit. J. Child. Dis. **16**: 89 (April-June); 200 (Oct.-Dec.) 1919.

Clinical Notes, Suggestions and New Instruments

SERUM TREATMENT OF TULAREMIA*

Lee Foshay, M.D., Cincinnati

Ten cases of acute tularemia have been treated with a specific antiserum prepared from a goat inoculated with formaldehyde-killed suspensions of Pasteurella tularensis. The therapeutic responses have been sufficiently definitive to justify a preliminary report.

Usually about 10 cc. of serum has been given intravenously to each patient on both the first and the second day in the hospital. No serum reactions have occurred. In nine cases there has occurred an abrupt cessation of fever, malaise, chills, sweats, arthralgias and myalgias forty-eight hours after the second injection, and also a rapid reduction in the volume of the involved lymph glands to an average of one half of their former diameters. Not a single lymph gland has suppurated. The skin rash, when present, has likewise either disappeared or faded extensively within the first three days. One patient, received in a dying condition, was not benefited.

A detailed report of these and possibly of other cases will be rendered after the present rabbit season has passed. For the present, the antiserum, if used early, gives promise of being a potent, reliable and satisfactory therapeutic measure for tularemia.

126 Wellington Place.

PRIMARY ABSCESS OF THE EPIGLOTTIS

J. Allan Weiss, M.D., Chicago

The cartilages of the larynx are subject to a variety of diseases and traumatic influences of endogenous and exogenous origin. Infection may extend to the larynx from adjacent inflammatory processes in the lingual or faucial tonsils, the pharynx, the nasal sinuses or the deep tissues of the neck through the blood vessels, the lymphatics or by direct continuity. Ballin [1] and S. Cohen [2] have commented on the rarity of abscess of the larynx, considering the universal occurrence of infections of the upper respiratory tract which frequently terminate in localized abscesses in the tonsillar, peritonsillar or retropharyngeal regions. Suppuration of the larynx also occurs as a secondary infection superimposed on syphilitic, malignant or tuberculous infiltration; following necrosis of cartilage due to excessive radium or roentgen therapy or to pressure of tracheotomy or intubation tubes; after perichondritis complicating typhoid, influenza, pneumonia, diphtheria or the exanthems; as a metastatic lesion in ulcerative endocarditis or pyemia, or as a sequel to stab-wounds or fractures.

Primary abscess of the epiglottis, however, has been infrequently reported. Semon [3] found the epiglottis involved in ten of a series of fourteen cases of acute suppuration of the larynx observed in a period of twenty years. In two of these cases the infection was limited to that cartilage but in only one was the process primary. In a group of twenty cases of epiglottic inflammation reported in the English literature, eight were deemed to originate there.[4] Abscess of the epiglottis may be

* From the Christ Hospital Institute for Medical Research.

1. Ballin, M. J.: Laryngeal Abscess, New York M. J. **104**: 781 (Oct. 21) 1916.
2. Cohen, S.: Idiopathic Abscess of the Larynx, Laryngoscope **35**: 311 (April) 1925.
3. Semon, F.: Medico-Chirurgical Transactions, London **78**: 181, 1895.
4. Key, S. N.: Angina Epiglottidea Anterior, J. A. M. A. **67**: 116 (July 8) 1916. Scal, J. C.: Report of Three Cases of Abscess of the Larynx, M. J. & Rec. **123**: 182 (Feb. 3) 1926. Thiesen, C. F.: Angina Epiglottidea Anterior, Albany M. Ann. **21**: 395, 1900. Friedman and Greenfield: Acute Phlegmonous Epiglottitis, New York M. J. **115**: 137 (Feb. 1) 1922. Lederman, M. D.: Acute Phlegmonous Epiglottitis, Laryngoscope **24**: 25, 1914. Seitz, R. P.: Acute Streptococcic Laryngitis in Children, California & West. Med. **30**: 259 (April) 1929. Brown, P.: Abscess of Larynx, M. Rec. **44**: 199 (Aug. 12) 1893. Daily, Louis; and Allen, N. A.: Acute Infection of Epiglottis and Larynx, Laryngoscope **36**: 367 (May) 1926. Gilmore, G. B.: Abscess of Epiglottis, New York State J. Med. **30**: 448 (April 15) 1930. Hyde, C. I., and Richman, J.: Acute Infectious Edematous Laryngitis, Arch. Pediat. **48**: 124 (Feb.) 1931. Shambaugh, G. E.: Acute Perichondritis of the Epiglottis, S. Clin. Chicago **4**: 1191 (Dec.) 1920. Howard, R. E.: Laryngeal Abscess, Laryngoscope **41**: 344 (May) 1931.

considered primary when it occurs in the absence of preceding underlying disease of that structure or of demonstrable infection elsewhere.

The following case is illustrative:

REPORT OF CASE

L. R., a man, aged 42, an executive, seen, September 16, complained of malaise and mild soreness on swallowing. His temperature was 99.4 F. On examination no acute disease could be found in the ears or nose. The tonsils were small and not injected. There were no palpable cervical glands. The pharynx showed a low-grade chronic injection consistent with the patient's habit of excessive smoking. With a laryngeal mirror no acute inflammation was evident in the lingual tonsil, arytenoids or vocal cords. The epiglottis, however, presented a reddened, hyperemic and glistening lingual surface.

The usual treatment for acute laryngitis was instituted. The following day there was seen some increase in the swelling and the patient complained of a feeling of a "lump in the throat" and frequent hawking, productive of small amounts of mucus. The temperature was 100.2 F. The epiglottis was swabbed with equal parts of 1:1,000 epinephrine chloride and 10 per cent zinc sulphocarbolate solutions. September 18, two days after the onset of symptoms, after an uncomfortable night due to marked soreness and fulness of the throat, increased dysphagia and coughing, the patient was removed to the hospital.

At this time there was an increased frequency of respiration with slight difficulty on inspiration, which was noisy but not stridorous. There was no cyanosis or retraction of the infrasternal or supraclavicular spaces. The voice was guttural but not hoarse. The general condition was excellent and there was no air-hunger, restlessness or exhaustion. The temperature was 100.6 F., and the leukocyte count was 18,800, with 72 per cent polymorphonuclear leukocytes. General examination was essentially negative. A laryngoscopic examination revealed the epiglottis as a spherical mass about three times normal size, overhanging and partially blocking the vestibule of the larynx. The swelling obscured the outline of the cartilage but was limited to the anterior surface, which was smooth, glistening, boggy to the touch with a probe, and bright red except for two pea-sized white areas of localized necrosis. The larynx was hidden from view except for part of the arytenoid cartilages, which were not swollen. When the epiglottis was drawn forward with a curved probe, a portion of the vocal cords could be seen to be normal in appearance and mobility.

Though the immediate indication was not urgent, it was considered advisable to relieve the mechanical obstruction by incisions to promote drainage. The epiglottis was anesthetized by topical application of a 10 per cent cocaine-epinephrine solution. Under indirect laryngoscopy, with the use of a curved guarded-blade larynx knife of the plunger type, punctures were made through the two softened areas, allowing escape of seropurulent fluid. The dyspnea improved rapidly and was gone by the next morning, when the swelling had decreased enough to permit a view of the posterior third of the vocal cords. The mucosa now was dry, glazed, lax and dull red, with pus exuding from the puncture openings.

Expectoration of droplets of pus continued for several days. Drainage was aided by probing the incisions daily, after removing small plugs of necrotic tissue. Soreness, dysphagia and muffled speech gradually disappeared. September 22, four days after operation, the epiglottis was normal in size and contour, but still slightly hyperemic. The temperature and white blood count were normal. Culture of pus from the knife blade showed a growth of Staphylococcus albus. The Wassermann reaction of the blood was negative.

COMMENT

The moderate elevation of temperature, the limitation of inflammation to the epiglottis, and the absence of local extension or systemic manifestations were evidence of the relatively mild nature of the infection in this case. This is compatible with the isolation of Staphylococcus albus as the causative organism.

Mild cases may respond to medical measures. In this instance, however, the swelling was sufficient to require multiple incisions to relieve mechanical embarrassment to respiration and to avoid a greater degree of dyspnea, which would follow extension to the arytenoid cartilages, aryepiglottic folds or false cords, directly encroaching on the glottis.

ANATOMIC DISCUSSION

Restriction of infiltration to the anterior aspect of the epiglottis is the usual finding in most cases. This is due to the looseness of the areolar connective tissue of the submucosa in this location. Hajek[5] has shown experimentally that fluid may extend to the glosso-epiglottic fossa at the base of the tongue but is confined to the lingual surface of the epiglottis by the firm attachment of the mucosa, anteriorly, to the free margin of the cartilage and, laterally, to the pharyngo-epiglottic folds. However, Logan-Turner[6] indicated that these connections constitute merely an anatomic barrier to edema or moderate infections. Severe infections may extend to other parts of the larynx or to the deep cervical tissues by continuity of the mucosa.

ETIOLOGY

The general factors predisposing to acute epiglottitis are similar to those of catarrhal laryngitis, including chilling by exposure to wet and cold, excessive use of alcohol or tobacco, debilitating influences as mental or physical strain, malnutrition, autointoxication and chronic organic diseases. Inhalation of irritating vapors or aspiration of very hot or corrosive liquids may result in devitalization of the protective mucosa. Also, the epiglottis may be directly traumatized by foreign bodies, bones or sharp food particles, which may cause an abrasion providing an atrium for the resident bacterial flora of the throat. Such an accident may be so slight as to be unnoticed by the patient or dismissed as insignificant at the time of occurrence. This is the presumable cause in the case reported.

However, direct trauma is probably not the major factor in primary involvement of the epiglottis. It is difficult to correlate the low incidence of lesions of this structure with its seeming vulnerability to injury due to its prominent position at the entrance of the larynx and its protective function as trap-door to the tracheopulmonary system.

The bacteriology is varied, though some type of streptococcus is the most frequent offender. In thirteen cases of epiglottic suppuration in which cultures were reported, Streptococcus hemolyticus was found in pure culture in six cases and in mixed infection in four cases. Other organisms found included Bacillus influenzae, B. coli, B. pyocyaneous, Micrococcus catarrhalis, Staphylococcus aureus and the pneumococcus. In twenty-eight cases of diffuse laryngotracheobronchitis, Bradford and Leahy[7] found Streptococcus viridans predominating.

SYMPTOMS

In severe cases, symptoms of hoarseness, dysphagia, wheezing and external tenderness occur. Increasing dyspnea with cyanosis, restlessness and retraction of the soft tissues of the chest on inspiration indicate extension to the interior of the larynx.

In fulminating infections, usually of streptococcic origin, high fever, chills and prostration supervene as evidence of pneumonia, or of pyemia, often with localizing signs of involvement of the heart, pleura, pericardium, peritoneum or joints. Direct extension to the deep tissues of the neck or to the mediastinum may occur.

TREATMENT

In addition to general "cold" management, in earlier stages the use of external and internal cold applications and also sprays of epinephrine, ephedrine or cocaine to the epiglottis are of value to shrink the swelling. Multiple incisions are often necessary to reduce engorgement or provide drainage.

In threatened asphyxia, prompt establishment of an airway is imperative. Although tracheotomy carries the hazard of subsequent pneumonia, it affords an easier and more positive method of maintaining breathing without the injury to inflamed tissues caused by intubation. Supportive measures to sustain the patient and specific treatment are necessary when complications arise.

SUMMARY

Primary abscess of the epiglottis is rare despite the universal occurrence of infections of the upper respiratory tract. A case is reported which required multiple incisions and drainage to relieve obstruction to breathing.

104 South Michigan Avenue.

5. Hajek, quoted by Friedman and Greenfield (footnote 4).
6. Logan-Turner, A.: The Submucous Areolar Tissue of the Larynx, Edinburgh M. J. **11**: 417, 1902.
7. Bradford, W. L., and Leahy, A. D.: Acute Obstructive Laryngitis, Am. J. Dis. Child. **40**: 298 (Aug.) 1930.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

W. A. PUCKNER, Secretary.

SODIUM IODOBISMUTHITE.—Sodium bismuth iodide.—A compound formed by the interaction of bismuth chloride and sodium iodide in ethyl acetate solution, consisting essentially of hydrated sodium iodobismuthite (sodium bismuth iodide) $NaBiI_4$, with inorganic salts. It contains approximately 21 per cent bismuth (Bi), 62 per cent iodide (I^-) and 11 per cent water of hydration.

Actions and Uses.—It is claimed for this new bismuth preparation, sodium iodobismuthite, that it has the quality of appearing in the spinal fluid and of penetrating the brain tissue.

Dosage.—See Iodobismitol.

Sodium iodobismuthite occurs as a red crystalline compound, odorless, or having only a faint acetic or ethyl acetate odor, permanent in dry air and possessing an astringent taste. It yields a clear solution with one part water; on moderate dilution of the solution, sodium iodobismuthite hydrolyzes to form a black precipitate of bismuth iodide in a finely divided state, while on further addition of water the black precipitate changes to red bismuth oxyiodide. Hydrolysis may be retarded by the addition of acids or alkali iodides. The aqueous solution is neutral or faintly acid to litmus. Sodium iodobismuthite dissolves readily and without decomposition in ethylene-glycol, propylene glycol, glycerin, anhydrous alcohol and ethyl acetate; it is insoluble in absolute ether, chloroform, carbon disulphide, petroleum ether, fixed oils and liquid petrolatum. On heating the product in an oven at 80 to 110 C., it loses water of hydration, with slight decomposition, leaving a maroon colored residue that becomes brown or black on aging, and that changes to red on exposure to moisture.

Add 3 cc. of hydrochloric acid and 25 cc. of water to about 0.5 Gm. of sodium iodobismuthite, add an excess of stronger ammonia water, filter and wash the filter with water. Ignite the filter in a quartz crucible; the residue is yellow. A few drops of the filtrate imparts an intense yellow color to a nonluminous flame. Add 3 cc. of ferric chloride solution to a 10 cc. portion of the filtrate acidified with hydrochloric acid, shake with 3 cc. of chloroform; a violet coloration is imparted to the chloroform. Add 5 cc. of chloroform to about 0.2 Gm. of sodium iodobismuthite and shake the mixture; the chloroform remains clear and colorless (*free iodine* and *distinction from quinine bismuth iodide*). Percolate 0.1 Gm. of sodium iodobismuthite with 10 cc. of absolute ether; no residue remains after the evaporation of the solvent. Add 2 cc. of nitric acid to 1.5 Gm. of sodium iodobismuthite in a quartz dish, evaporate on a steam bath and ignite at red heat; dissolve in 5 cc. of hydrochloric acid; the solution meets the requirements of the Bettendorff test, U. S. P. X (*arsenic*). Add just sufficient nitric acid to blacken 3 Gm. of sodium iodobismuthite contained in a 150 cc. beaker, add 100 cc. of water and boil; filter and evaporate the filtrate to 30 cc., filter again and divide the latter filtrate into portions of 5 cc. each. Mix one portion with an equal volume of dilute sulphuric acid; the liquid does not become cloudy (*lead*); precipitate another portion with a slight excess of ammonia water; the supernatant liquid does not exhibit a bluish tint (*copper*); another portion is not immediately affected by barium nitrate solution (*sulphate*). To another portion, add diluted hydrochloric acid; no precipitate is formed which is insoluble in a slight excess of hydrochloric acid, but soluble in ammonia water (*silver*).

Transfer about 0.4 Gm. of sodium iodobismuthite, accurately weighed, to a wide mouth weighing bottle and heat to constant weight in an oven at 110 C.; the loss in weight is not less than 10.5 per cent nor more than 12.5 per cent.

Transfer about 0.2 Gm. of sodium iodobismuthite, accurately weighed, to a beaker, dissolve in 3 cc. of hydrochloric acid and 125 cc. of water, saturate the solution with hydrogen sulphide to precipitate completely the bismuth as bismuth sulphide, filter in a gooch crucible, wash with water, alcohol, chloroform and ether in this order, dry for one hour at 100 C., cool in a desiccator and weigh; repeat the washing with chloroform and ether and the drying at 100 C. until constant weight is attained; the bismuth sulphide weight is equivalent to not more than 21.8 per cent, nor less than 20.3 per cent bismuth.

Transfer about 0.2 Gm. of sodium iodobismuthite, accurately weighed, to a 250 cc. beaker, add 10 cc. of a solution of acid silver nitrate (prepared by dissolving 1 Gm. of silver nitrate in 20 cc. of water and adding 5 cc. of nitric acid) and then 100 cc. of water, allow to stand two hours, filter, using a filter paper, wash well with water. Without allowing the precipitate to dry, puncture the filter and wash the precipitate into a 250 cc. glass-stoppered erlenmeyer flask, using 100 cc. of stronger ammonia water, agitate the solution, then allow the flask and contents to stand two hours, collect the precipitate on a prepared gooch crucible and wash it with diluted ammonia water, then with water; dry to constant weight at 100 C. The weight of silver iodide is equivalent to not less than 60 per cent nor more than 63 per cent iodide. Add 10 cc. of potassium iodide solution to the filtrate and heat on the steam bath until most of the ammonia has been removed, filter the solution and collect the precipitate on a prepared gooch crucible, wash with water, dry to constant weight at 100 C.; the weight of silver iodide is equivalent to not more than 0.7 per cent chloride.

IODOBISMITOL.—A solution of sodium iodobismuthite (sodium bismuth iodide) in ethylene glycol containing 0.1 per cent acetic acid. Each cubic centimeter contains sodium iodobismuthite equivalent to 0.012 to 0.0138 Gm. bismuth (0.0577 Gm. to 0.0664 Gm. sodium bismuth iodide) and 0.109 Gm. to 0.129 Gm. sodium iodide. The total iodide is equivalent to 0.159 Gm. to 0.171 Gm. sodium iodide per cubic centimeter.

Actions and Uses.—Iodobismitol seems to be well absorbed and to be excreted fairly rapidly. In laboratory animals the bismuth enters the brain in from 90 to 100 per cent of the cases, and in human beings treated with the drug it has been shown in the spinal fluid in over 90 per cent of the cases. The claim is made for it that it will penetrate the brain in a great majority of persons treated.

Dosage.—Intramuscular injections of 2 cc. repeated every three days. Two full days should elapse between injections. From eight to twelve injections comprise a course of treatment. A rest period of from two to four weeks should elapse between courses. At each injection the patient would thus receive from 0.024 to 0.0276 Gm. metallic bismuth (0.1154 to 0.1328 Gm. sodium bismuth iodide, and from 0.218 to 0.258 Gm. sodium iodide).

Manufactured by E. R. Squibb & Sons, New York, by license of Stanford University. U. S. patent applied for.

The specific gravity of iodobismitol at 25 C. ranges from 1.236 to 1.238. The *p*H of iodobismitol taken with a quinhydrone electrode ranges from 4.5 to 5.0.

Transfer about 3 cc. of iodobismitol, accurately weighed, to an erlenmeyer flask, add 3 cc. of hydrochloric acid and 125 cc. of water; determine the bismuth according to method outlined under sodium bismuth iodide. Each cubic centimeter contains the equivalent of not less than 0.012 nor more than 0.0138 Gm. Bi.

Add 10 cc. of a nitric acid silver nitrate solution (prepared by dissolving 1 Gm. of silver nitrate in 20 cc. of water and adding 5 cc. of nitric acid) to about 3 cc. of iodobismitol, accurately weighed, and then add 100 cc. of water, allow to stand two hours, filter into a prepared gooch crucible and wash with very dilute nitric acid (5 cc. diluted nitric acid to make 100 cc.), dry to constant weight at 100 C. The weight of silver iodide is equivalent to not less than 0.135 nor more than 0.145 Gm. iodide per cubic centimeter.

The sodium iodobismuthite in iodobismitol conforms to the N. N. R. standards for this substance.

PRELIMINARY REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

W. A. PUCKNER, Secretary.

GONOCOCCUS BOUILLON FILTRATE (GONOCOCCUS TOXIN)

In this issue of THE JOURNAL, page 532, there appears the preliminary report of Dr. B. C. Corbus, "Intradermal Immunization in Gonorrhea," concerning the experimental and clinical work with a gonococcus bouillon filtrate developed by Clark and Ferry of the Research Department of Parke, Davis & Co. In 1930, Parke, Davis & Co. informed the Council in a preliminary way in regard to the investigation of the product then under way. Later, at the request of the Council the product, together with a copy of the paper by Clark, Ferry and Steele, "Studies of the Properties of a Bouillon Filtrate of the Gonococcus," was presented by the firm for consideration by the Council. In presenting the product, Parke, Davis & Co. stated that the firm regarded it as being entirely on an experimental basis. Dr. Corbus submitted the manuscript of his present paper, a reprint of his paper in collaboration with O'Conor, "Intradermal Injections of Gonococcal Bouillon Filtrate. An Experimental Report" (*J. Urology*, September, 1930), and the manuscript of two other papers. He also submitted letters from a number of physicians who had used the product.

The submitted information and papers were submitted to a consultant of the Council, who reported that the studies of Clark and Ferry showed that their method had produced a soluble and filtrable toxic substance from the gonococcus. Concerning the papers of Corbus and of Corbus and O'Conor, the consultant stated that although these give in great detail the method and indications for treatment by this gonococcus bouillon filtrate under various clinical conditions, there is lack of suitable controls and no data are adduced to support the claim that the product is a satisfactory treatment. The consultant found a number of the letters of physicians submitted by Dr. Corbus to be favorable to the product, others neutral or negative; but taken as a whole these letters did not modify his conclusion that the evidence is inadequate to warrant general use of the product. The Council's referee concurred in the opinions of the consultant, agreeing wholly with the position of Parke, Davis & Co. in not making the preparation available for general use.

While the product itself is, according to the information submitted, of sufficiently controlled composition, the evidence for

its clinical value is insufficient, certainly not convincing enough to take it out of the experimental class or to warrant its recommendation for general use. The Council therefore postponed consideration of Gonococcus Bouillon Filtrate (Gonococcus Toxin) to await the development of confirmatory evidence of its clinical value.

Committee on Foods

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

RAYMOND HERTWIG, Secretary.

HYGEIA PURE STRAINED PEAS
Contains Vitamin D
Added Irradiated Ergosterol

Manufacturer.—The Snider Packing Corporation, Rochester, N. Y.

Distributor.—Hygeia Nursing Bottle Company, Buffalo, N. Y.

Description.—Strained peas retaining in large measure the mineral and vitamin content of the raw peas used; with added vitamin D (irradiated ergosterol), 60 D units per fluidounce; packed in jars. The D units are those defined by the Council on Pharmacy and Chemistry of the A. M. A. (New and Nonofficial Remedies, 1931, p. 414). One fluidounce is equivalent in vitamin D to the D content of one teaspoonful of cod liver oil. No sugar or seasoning is added.

Manufacture.—The Alaska late variety peas used are grown under contract, and harvested at an early stage of maturity; are removed from the vines by machine, passed through a blowing mill to remove splits and foreign material, washed, blanched for eight to ten minutes in water at 99 C., passed over a sorting table for removal of foreign material, filled into No. 10 enamel lined cans, and a small amount of hot water (90 C.) is added. The cans are sealed and processed for sixty-five minutes at 116 C. No salt or sugar is added.

In preparation for puréeing, the cans of peas are heated in hot water at 82 C., opened and inspected, and the contents are pumped to a paddle type puréeing machine of monel metal with a bronze rotor. Steam is injected into the enclosed puréeing machine to displace the air. The puréed peas are pumped into closed tin lined steam jacketed kettles at as low a point as possible. Steam is injected into the covered kettles to replace the air. The puréed peas are thoroughly mixed with 10 per cent of water to bring about the desired consistency and a definite quantity of irradiated ergosterol dissolved in corn oil is added. The irradiated ergosterol added is sufficient to effect a vitamin D potency equivalent to one teaspoonful of standard cod liver oil per fluidounce of finished product. The mixture is heated, pumped to an automatic filling machine, and filled into washed and preheated jars. The jars are capped under 10 to 14 inches mercury pressure in "vacuum" closing machines, processed for seventy minutes at 115 C., cooled under pressure, and stored for later examination.

Chemical Composition (submitted by manufacturer).—

Specific gravity 20 C./20 C.	1.05
	per cent
Moisture	85.0
Total solids	15.0
Ash	0.5
Fat (ether extract)	0.4
Protein (N × 6.25)	4.6
Starch (acid hydrolysis method)	4.8
Crude fiber	0.5
Carbohydrates other than crude fiber (by difference)	9.0
Calcium (Ca)	0.02
Iron (Fe)	0.001
Phosphorus (P)	0.02

Calories.—0.6 per gram; 17 per ounce.

Vitamins.—The vitamin content of the raw peas is retained in maximum degree in the manufacturing process by the use of equipment and procedure which excludes admixture with air; the vegetable material is exposed to steam atmosphere only. The jarred sieved vegetable is "vacuum treated" before the final processing to remove any incorporated air.

Vitamin D is incorporated in the puréed material to yield a vitamin potency of 60 D units per fluidounce of final product. The D units are those defined by the Council on Pharmacy and Chemistry of the A. M. A. (New and Nonofficial Remedies, 1931, p. 414). The vitamin D is added under license grant from the Wisconsin Alumni Research Foundation under the Steenbock patent.

Claims of Manufacturer.—The sieved peas are recommended for infants, children and convalescents and in special diets. The peas are scientifically prepared to retain to a maximum degree, or so far as is possible by present commercial sieving and canning methods, the natural mineral and vitamin values of peas.

FRANCK TABLETS
A Pure Roasted Chicory Product

Manufacturer.—Heinr. Franck Sons, Inc., Flushing, N. Y.

Description.—Roasted chicory root; ground and pressed into tablets.

Manufacture.—Chicory roots are grown from imported seed usually alongside sugar beets. The operations of harvesting are essentially the same as for sugar beets; lifting, pulling and topping. The roots are washed by machine, sliced, dried in drying kilns, cooled, cleaned of sand and dirt by special machines and roasted for from two to two and one-half hours, after which they are cleaned of ashes and adhering foreign material and finally ground for powdered chicory or crushed for granulated chicory. The chicory in the form of tablets is packed in cartons; the granulated or powdered form is sold in bulk.

Chemical Composition (submitted by manufacturer).—

	per cent
Moisture	3.5
Ash	4.7
Water soluble ash	2.9
Acid insoluble ash	0.4
Fat (petroleum ether extract)	3.6
Protein (N × 6.25)	7.3
Crude fiber	7.9
Reducing sugars as invert	8.6
Sucrose (copper reduction method)	0.4
Total carbohydrates other than crude fiber (by difference)	73.0
Water extract	69.0

Calories.—2.5 per gram; 71 per ounce.

Claims of Manufacturer.—The roasted chicory tablets are suitable for addition to coffee beverage.

PAUL'S SANDWICH BREAD

Manufacturer.—Paul's Baking Corporation, Chicago.

Description.—A white bread made by the sponge dough method.

Manufacture.—The sponge dough ingredients, short patent flour of southwest and northwest wheats, water, yeast and a yeast food containing calcium sulphate, ammonium chloride, sodium chloride and potassium bromate, are mixed in a high speed mixer. The sponge dough is fermented for from four to five hours, after which are added flour, water, salt, sucrose, lard and sweetened condensed skim milk to make the completed dough, which is cut into pieces of desired weight. The pieces are fermented for a short time, molded into loaf form, panned, fermented, baked for from thirty to thirty-five minutes, cooled, and wrapped in wax-paper.

The factory, equipment and storage rooms are kept in strictly sanitary condition.

Chemical Composition (submitted by manufacturer).—

	per cent
Moisture (entire loaf)	35.3
Ash	1.8
Fat (ether extract)	2.8
Protein (N × 6.25)	10.0
Crude fiber	0.3
Carbohydrates other than crude fiber (by difference)	49.8

Calories.—2.6 per gram; 74 per ounce.

Claims of Manufacturer.—A bread of good quality.

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SATURDAY, FEBRUARY 13, 1932

FOOD AND HEALTH—A STUDY OF CONSUMERS' HABITS

Knowledge about nutrition seems to be in a state of continual flux. Fifteen years ago Mendel [1] of Yale University, addressing the second Pan American Scientific Congress at Washington, remarked that man no longer depends on his instincts alone for guidance in the affairs of life; otherwise progress would indeed be slow. He pointed out that the problem of food supply is not one which can be dismissed by the social philosopher or solved by the calculations of the economist. It is highly complex with its involvement of factors and interests in agriculture, commerce, industry and nutrition. Here, as in other domains, there is opportunity for an interplay of science and the arts, of experience and investigation. To attempt to foretell the future seems more like an act of ill considered rashness than a keen intellectual venture. We are beginning to learn what real food values mean. There is as yet no ideal ration.

There can be no doubt that changes in the food habits and dietary standards of persons are going on in many parts of the world. It is not always easy to analyze the underlying causes for such dietary changes; they are not always merely physiologic or dominantly economic in origin, as one might expect. Rubner once remarked that sometimes revolutions occur in the field of popular nutrition. The introduction of the potato in many extensive regions is cited as an illustration.

Today our prescribed diets are tending to become more and more complex. In an engaging volume on nutrition and physical fitness, Bogert [2] has asserted that, while a varied diet has many advantages, it is not essential to securing good nutrition. In the simpler civilizations of the past and at present in many parts of the world where, for one reason or another, the food supply is limited, peoples have been and still are being brought to a high degree of physical development and maintained in great sturdiness on diets that consist of only a few foods. Bogert adds that we have in our present-day highly industralized civilization a situation in which, with a wider range of foods to choose from than any people has ever had before, the nutritional condition and physical vigor of our nation has unquestionably deteriorated.

Without accepting this challenge in regard to the "state of the nation," so far as the bodily welfare of the people is concerned, it may nevertheless be admitted that current customs with respect to foods are not devoid of surprising vagaries. A recent writer [3] ventures to believe that American food habits have not been developed as a result of necessity but are matters of choice or fancy. Changes in the proportions of different foodstuffs grown or manufactured have been based largely on what people could be induced to buy rather than to supply a population ready to purchase whatever foodstuffs were available. This situation, Sherman concludes, has led to a great deal of advertising and propaganda to induce consumers to change their food habits. Among the inducements offered have been novelty, attractiveness, convenience and, most successful of all, health appeal.

A few illustrations regarding our changing choices of food are elucidating. Sugar, once consumed in quantities less than ten pounds per annum for each person, is now used to ten times this extent—more than a hundred pounds in the course of the year. Greater availability and low costs have transformed what was merely a condiment into a food that supplies one seventh or more of the nation's calories. Within ten years the haulage of spinach on the railroads has increased, despite the protests of American children importuned to eat it, from 2,500 carloads to 10,000 carloads a year; lettuce shipments have been quadrupled within the decade. The citrus fruit industry has been rescued from the grave dangers of overproduction. New dietary customs have been initiated.

Wisdom is by no means always the guide in these changes. Sherman [3] has pointed out the almost universal habit of selecting foods by the eye and the difficulty encountered in attempts to substitute any more scientific test in the place of the visual. In the development of commercial grades and standards for fruits and vegetables we are constantly confronted with the fact that commercial values are largely dependent on appearance. If our first, second and third grades for any fruit or vegetable are to represent differences in commercial value we find ourselves often compelled to give major weight to factors that have no dietetic significance. Recent emphasis on the value of certain "greens" as "protective foods" may be responsible for certain current absurdities in practice. As pointed out by Sherman,

> Certainly there is little to be said in defense of our recently developed habit of shipping tens of thousands of carloads of carrots, beets, turnips, radishes, and even parsnips for

1. Mendel, L. B.: Changes in the Food Supply and Their Relation to Nutrition, New Haven, Yale University Press, 1916.
2. Bogert, L. J.: Nutrition and Physical Fitness, Philadelphia, W. B. Saunders Company, 1931.
3. Sherman, W. A.: Food Supplies and Consumers' Habits, J. Home Economics **23**: 1103 (Dec.) 1931.

thousands of miles, paying freight upon countless tons of tops which no one uses and which, if they arrive wilted, or decayed, are a positive detriment to the product. With the exception of a very few beet leaves, these vegetable tops all go into the garbage can, as do the green stems which surround the head of the cauliflower, and the outer leaves of all cabbage and lettuce. Here, it seems to me, is an enormous economic waste and one which is growing annually.

All of these southern and Pacific Coast vegetables shipped fresh under refrigeration with tops or green foliage attached bear a freight rate which, in many cases, represents nearly fifty per cent of the delivered value of the product. It is safe to say that in the case of many of these products about thirty per cent of the bulk, and perhaps fifteen to twenty-five per cent of the weight, consists of tops and leaves which finally disappear as trimmings. The heavy transportation and icing charges which have been paid on this useless foliage must be recovered in the price of that part of the goods actually consumed.

If it should prove that we are now nearer the beginning than the end of a period of economic readjustment, and if before it is ended the average American family will be willing to give more careful thought to the cost and character of its food than it has been necessary to do in recent years, it may be well for us to consider the possibility of modifying the consumer's point of view so that she will not demand that freight be paid upon so much garbage which she never uses but which adds materially to the cost of what she does use.

American food habits should become rationalized with respect alike to health and to economy at a time when distress is threatening thousands of persons.

EXPERIMENTAL NEURO-ALLERGY

In 1930 Dr. D. A. Shamburov [1] of the Neuropsychiatric Institute, Moscow, claimed that stock vaccines may be injected with safety into the cerebrospinal fluid and that so injected they exert a favorable influence on certain chronic infections of the central nervous system. More recently two important studies have been made by American investigators [2] of the immunophysiology of subarachnoid and nervous tissues having a direct bearing on the feasibility of Shamburov's proposed local vaccination. In his preliminary experimental work on rabbits the Russian investigator showed that by routine subcutaneous or intraperitoneal injections of vaccines the specific antibody titer of the cerebrospinal fluid cannot be raised higher than from 0.125 to 0.25 per cent of the corresponding titer of the blood stream. By injecting the same vaccines by suboccipital puncture into the subdural space, however, he found that the antibody content of the cerebrospinal fluid could be increased to as much as 20 per cent of that of the circulating blood and that it remained at this unusual high titer for at least two months. Shamburov assumed that this high local antibody titer must logically exert a favorable influence on homologous chronic infections of the central nervous tissue. A criticism of this logic is implied in the more recent studies of the antibody content of nervous tissues by Dr. Jules Freund [2] of the Phipps Institute, Philadelphia. Freund found that in both active and passive immunization the specific antibody titer of the central nervous tissues of rabbits is at least three times greater than that of the surrounding cerebrospinal fluid. From this he was forced to conclude that "it is very unlikely that . . . antibodies reach the brain tissues by way of the cerebrospinal fluid," the cerebrospinal fluid apparently being a mere mechanical drainage fluid from the interstitial tissue spaces. If this conclusion is correct the cerebrospinal fluid can have little or no local immunologic action except on the meningeal surfaces with which it is in immediate contact. There is therefore reasonable doubt that the Shamburov technic for local vaccination can influence local infections of the central nervous tissues, except indirectly by absorption of the locally synthesized or locally mobilized antibodies into the systemic blood stream.

The most serious objection to the proposed subarachnoid vaccination, however, is implied in the currently published researches of Davidoff and Kopeloff [2] of the Psychiatric Institute, New York. These investigators developed a new technic for the study of neuro-allergies. They trephined dogs over the left motor area and inserted into the underlying cerebral tissues a small cube of normal horse serum stiffened with 6 per cent agar, followed by a routine sensitizing dose of horse serum intravenously. The slight transient hemiplegia resulting from the purposeful [sic] injury to the cerebral cortex disappeared within a few days. At the end of the usual sensitization period the dogs were tested by an intravenous injection with a sublethal dose of horse serum. In four of the five dogs thus far studied by this dual technic the classic picture of anaphylaxis was complicated by a "definite right-sided hemiplegia within a few minutes after the intravenous injection." American clinicians will not be tempted to use the Shamburov local subarachnoid vaccines till more extensive experimental studies have been made of this potentially dangerous local neuro-allergy.

1. Shamburov, D. A.: Ztschr. f. Hyg. u. Infektionskr. **111**: 278 (April) 1930.

2. Freund, Jules: J. Exper. Med. **51**: 889 (June) 1930. Davidoff, L. M., and Kopeloff, Nicholas: Proc. Soc. Exper. Biol. & Med. **29**: 71 (Oct.) 1931.

PHYSICAL TRAINING AND METABOLISM

In his volume on the physiology of muscular exercise, Bainbridge [1] remarked more than a decade ago that the real value of exercise probably lies mainly in its effects on the metabolism of the tissues themselves. Some investigators have looked to changes in the heart and in the circulatory and respiratory mechanisms as the foremost factors involved in that adjustment described as physical training. The trained athlete is supposed to work more "efficiently" than his untrained companion; but as efforts to interpret the advantage in terms of increased efficiency of breathing or circulation alone have not been convincing in every instance, one must look elsewhere for a tenable explanation. The muscle cells at once suggest themselves as the center

1. Bainbridge, F. A.: The Physiology of Muscular Exercise, London, 1919, p. 184.

of interest. Is their characteristic exchange of energy altered? If so, this should exhibit itself in an altered basal metabolism. Recognizing that metabolism is a cellular process, that each living cell uses its share of the total oxygen absorbed by the individual, Schneider [2] has pointed out that our real problem is to determine whether or not the cellular processes of the body are accelerated, retarded or unaltered by training. If the cells are stimulated to increased activity, they will use more oxygen; but if the life process becomes more efficient, they will use less oxygen. Training may so affect the cells that they will use, even in rest, more oxygen or less oxygen than formerly; or it may not alter their usage of oxygen. There is a widespread opinion, Schneider continues, that the body is physically and mentally more efficient if regular physical exercise is taken. While we cannot at present prove that cellular metabolism becomes more efficient as a result of training, if we assume that it does an explanation is at hand for the fall in the basal metabolism seen in some athletes and nonathletes during a period of training.

The facts as determined by Schneider and his co-workers at Wesleyan University in Middletown, Conn., indicate that the basal metabolic rate of all men does not respond in the same manner to a period of physical training. Of seven nonathletes who were under observation during periods of daily moderate physical exercise, three showed an appreciable fall, two a rise, and two no change in the metabolic rate. Among ten athletes, eight showed a drop in the basal metabolic rate during training, one an increase, and another no change in the rate. The literature on this subject reveals that some workers in this field have reported that physical training causes a rise while others have reported that it causes a fall in basal metabolism.

An ingenious interpretation of these seeming contradictions has been offered by Schneider. If, as already remarked, the life processes in the muscle cells become more efficient through use, they may require less oxygen. Their basal metabolism will fall. On the other hand, if a period of physical training should at the same time result in an increase in the mass of active tissue in the body, we must assume that the added protoplasm requires its share of oxygen and that this increases the total oxygen requirement of the body.

Somewhat antagonistic influences may thus present themselves as the result of training. In the words of Schneider: If during a period of training the gain in cellular efficiency overbalances the gain in the mass of body protoplasm, a fall in the basal metabolic rate will result. If, on the other hand, there occurs a considerable increase in the size of muscles, due to a formation of active protoplasm, this may overshadow the gain in cellular efficiency and result in an increase in the basal metabolism. Lastly, if the increase in efficiency should just be counterbalanced by the new production of protoplasm, the basal metabolic rate of the individual would remain unchanged during a period of physical training. From such standpoints the apparent inconsistencies in our current information become at least less disconcerting to a critical reviewer.

2. Schneider, E. C., and Foster, A. O.: The Influence of Physical Training on the Basal Metabolic Rate of Man, Am. J. Physiol. **98**: 595 (Nov.) 1931.

Current Comment

PHYSICIANS' INCOME TAXES

Physicians are advised to file their federal income tax returns without further delay. They must be filed not later than March 15. The congressional committee that is drafting new income tax legislation has not submitted a report. It has been announced, however, that such changes as may be agreed on will not affect taxes payable under the present law and computed on the basis of income received in 1931. The possibility of having to file supplemental returns if regular returns are filed now seems therefore to be negligible. Elsewhere in this issue of THE JOURNAL [1] is a statement for the guidance of physicians in filing their returns.

OPINIONS ON PRESCRIPTIONS OF ALCOHOL

Hearings before the Senate committee that is concerned with the bill introduced by Senator Bingham to modify the prohibition regulations have brought to light some astounding testimony. Among those who have participated in giving evidence was a former president of the American Medical Association—Dr. Arthur Dean Bevan. It is unfortunate that physicians should testify beyond their scientific opinions regarding the effects of alcoholic liquors on the human body. Dr. Bevan seems to have ventured positive statements on the social effects of alcohol and on the ethical aspects of medical prescribing. In proffering his opinions, Dr. Bevan demonstrated an extraordinary lack of confidence in his professional brethren. He moralized on the terrific temptation confronting the profession through the fact that many physicians have incomes of approximately $2,500 a year and, in the right to prescribe, have seen, in his opinion, an opportunity to make $1,200 extra. Dr. Bevan is apparently familiar with the cost of whisky per case at corner drug stores; he asserted that a considerable number of physicians were providing the signed prescriptions that permitted druggists and bootleggers to sell this liquor by the case. THE JOURNAL wishes to protest editorially against this expression of opinion by one of the past presidents of the Association. If Dr. Bevan has actual evidence that any physician is selling his prescriptions *en masse* in order to permit druggists and bootleggers to dispose of whisky in case lots, he, and all of those who possess the information, are equally guilty with those who are violating the law in permitting the violation. If he has not the evidence, he is certainly without warrant in making such a statement to a Senate committee; in any event he is not justified in indicting the entire profes-

1. Page 574.

sion for the misdemeanors of a few. His statement reflects great discredit on a profession whose ideals are certainly as high as those of any other professional group in the country. As a leader of that profession for one year, he should be more familiar than he seems to be with its ethical standards and with the extent to which physicians actually are guided by a proper appreciation of moral values.

Association News

MEDICAL BROADCAST FOR THE WEEK

American Medical Association Health Talks

The American Medical Association broadcasts on Monday from 12 noon to 12:05 p. m. over Station WBBM (770 kilocycles, or 389.4 meters) and other stations of the Columbia Broadcasting System, and on Wednesday and Friday from 2:25 to 2:30 p. m. over Station WBBM, Chicago.

The program for the week is as follows:

February 15. Trends in Mental Diseases.
February 17. Prevent Death if Not Disease.
February 19. Baby's First Bath.

There is also a fifteen minute health talk sponsored by the Association on Saturday morning from 11:15 to 11:30.

The program for the week is as follows:

February 20. Goiter—Enlargement of the Thyroid Gland.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Bureau of Sanitary Engineering.—At a special meeting of the board of health of San Francisco, Dec. 14, 1931, a resolution was unanimously adopted requesting the appointment of Charles Gilman Hyde, professor of sanitary engineering of the University of California, as consulting sanitary engineer to the director of public health of San Francisco. This appointment resulted in the formation of a bureau of sanitary engineering. Under a new charter, effective January 8, the title of Dr. Jacob C. Geiger, city health officer, became director of public health.

Two Deaths from Trichinosis.—Two persons died from trichinosis in San Francisco recently, after having eaten undercooked sausage which was received as a gift from a friend in Marin County. The animal from which the sausage was made had been killed, Dec. 17, 1931. Sausage, salami and other products were manufactured on the ranch where the animal was killed. It was thought that at least twelve persons had been exposed, but, according to the bulletin of the state department of health, January 23, the two fatalities were the only cases reported.

Society News.—Dr. Willis C. Campbell, Memphis, Tenn., addressed the San Diego Academy of Medicine, January 19, on "Treatment of Affections of the Lumbosacral Region." He spoke on "Treatment of Ankylosed Joints" before the Los Angeles County Medical Association, January 21.——The San Diego County Medical Society was invited by the commanding officer, U. S. Naval Hospital, to be present at a special program, January 15, when Drs. John V. Barrow gave an address on "Human Amebas"; William C. Boeck, "Colitis," and William H. Daniel, Los Angeles, a proctologic clinic.——Dr. Ellis W. Jones, among others, addressed the Los Angeles Clinical and Pathological Society, January 28, on "Trochanteric Transplantation in Treatment of Fractures of the Neck of the Femur."——Dr. Delbert H. Werden spoke on "Intracranial Venous Anomaly" before the Los Angeles Society for Neurology and Psychiatry, January 27; Drs. George H. Patterson and Arthur R. Timme were also on the program.——Dr. Loyal Davis, Chicago, addressed the Los Angeles Surgical Society, February 12, on "Experimental and Clinical Studies on the Pathways of Transmission of Pain and Its Surgical Relief."——An addition to the department for acute mental disease of Livermore Sanitarium, Livermore, was recently opened; the annex provides eight sound-proof rooms.——At the meeting of the Los Angeles County Medical Association, February 4, the speakers were Drs. Jay J. Crane and George F. Schenck on "Transureteral Resection of Bladder Neck Obstruction"; William Dewey Wightman and Shuler F. Fagan, "Margin of Safety and Technic of Spinal Anesthesia," and Philip J. Murphy, "Diagnosis and Surgical Judgment in Acute Abdominal Pain."——At the meeting of the San Francisco Pathological Society, February 1, the program included addresses by Drs. Margaret Schulze, San Francisco, and Frederick Proescher, Agnew, on "Granulosa Cell Tumor of Ovary" and "Chemistry of Neuroglia Staining," respectively.

COLORADO

Dr. Bloodgood to Conduct Clinics.—Dr. Joseph C. Bloodgood, clinical professor of surgery, Johns Hopkins University School of Medicine, Baltimore, will hold two microscopic-pathologic clinics, February 25-26, under the auspices of the Clinical and Pathological Society of Denver. Dr. Bloodgood will also give a lecture the second day on "What Every Doctor Should Know About the First Sign of Cancer."

Society News.—At the January 19 meeting of the Medical Society of the City and County of Denver, Drs. Duval Prey and Ora S. Fowler spoke on "Procedure That Should Be Routine in the Postoperative Conduct of a Surgical Case" and "Renal Syndrome with Hypocortinism," respectively. Dr. Willis C. Campbell, Memphis, addressed the society, February 2, on arthroplasties.——Samuel J. Lewis, D.D.S., Detroit, addressed the Denver Dental Association meeting jointly with the Denver County Medical Society, February 11, on "Child Growth and Development, with Special Reference to the Development of the Bones of the Teeth and Jaws."

CONNECTICUT

Society News.—At the annual meeting of the Connecticut Public Health Association in Hartford, January 14, the speakers included Drs. Nathan M. Spector, Willimantic, and Harry B. Smith, epidemiologist, state department of health, on "Milk-Borne Typhoid Fever"; Raymond D. Fear, Stamford, and Albert E. Austin, Old Greenwich, "Diphtheria Toxoid," and William F. Wild, Bridgeport, Louis J. Dumont, New Britain, and Benjamin B. Robbins, Bristol, "Smallpox as a Public Health Problem."

Lafayette Mendel Presented with Portrait.—On his sixtieth birthday, February 5, Lafayette B. Mendel, Ph.D., Sterling professor of physiologic chemistry at Yale University School of Medicine, New Haven, was presented with a portrait of himself by John Quincy Adams, Viennese artist. Professor Mendel obtained his B.A. degree from Yale in 1891. He began teaching physiologic chemistry at Yale the following year, and, except for periods of study at Breslau and Freiburg, has been at the school continuously for forty years. He is a member of the governing boards of the school of medicine, Sheffield Scientific School and the Graduate School of Yale University. In 1893, Yale conferred the degree of Ph.D. on him. He was gold medalist of the American Institute of Chemists in 1927. Professor Mendel is well known for his analysis of the value of food constituents as shown by their influence on growth.

DISTRICT OF COLUMBIA

District Bills in Congress.—S. 1569 has passed the Senate, authorizing the Commission on Licensure to Practice the Healing Art to license Della D. Ledendecker to practice chiropractic in the District of Columbia.

FLORIDA

No Deaths from Diphtheria.—According to the annual report of the director of public welfare and local registrar, Miami did not have one death from diphtheria among its own people during 1931, the first time this record has been attained since Miami began the compilation of statistics. The report says that a resident of Coral Gables, an adjoining city, came to Miami and died within a few hours of diphtheria.

Society News.—A recent meeting of the Volusia County Medical Society was addressed by Dr. Hugh West, DeLand, on hyperthyroidism, and Dr. Charles A. Clemmer on arteriosclerosis.——The Pinellas County Medical Society was addressed, Dec. 3, 1931, at Clearwater, by Drs. Louis M. Orr,

Jr., Orlando, on "The Urologist and the Practice of Medicine," and Gaston H. Edwards, Orlando, on "Relationship of the Practitioner to the County Society and the State Association."

ILLINOIS

Society News.—Dr. William K. McIntyre, St. Louis, addressed the Adams County Medical Society, Quincy, February 8, on "Cancer of the Large Intestine."——Dr. Andrew C. Ivy, Chicago, addressed the Peoria City Medical Society, February 2, on "Physiological Aspects of the Etiology, Symptoms and Treatment of Gastroduodenal Ulcer."——The La Salle County Medical Society was addressed, February 9, by Drs. Robert S. Berghoff, Chicago, on "Syphilis of the Heart," and Arno B. Luckhardt, Chicago, "Ethylene Anesthesia" and "Importance of Animal Experimentation in the Advancement of Medical Knowledge."——Dr. Edmund Andrews, Chicago, addressed the Will-Grundy County Medical Society at Joliet, February 10, on "Intussusception."

Chicago

Society News.—The Chicago Gynecological Society will be addressed, February 19, by Drs. Louis Rudolph and Andrew C. Ivy on "Internal Rotation of the Fetal Head: From the Viewpoint of Comparative Obstetrics," and Dr. Henry Schmitz, "Technic of Irradiation in Uterine Carcinomas."——At the meeting of the Chicago Roentgen Society, February 10, the speakers included Drs. Cassie B. Rose on "Unusual Periostitis in Children"; Roe J. Maier, "Malignancy Originating in a Paget's Disease," and Maurice I. Kaplan, "Giant Cell Tumor of Humerus That Responded to Deep X-Ray Therapy."——Dr. James E. Lebensohn, among others, will address the Chicago Ophthalmological Society, February 15, on "Radiational Cataract."——The Chicago Society of Allergy will be addressed, February 15, among others, by Drs. Samuel J. Taub and Harry S. Arkin on "Asthma Due to Ingestion of Yeast."

KANSAS

Society News.—The Wyandotte County Medical Society was addressed in Kansas City, February 2, by Drs. La Verne B. Spake on "Surgical Mastoid" and Lewis W. Angle, "Bilateral Phrenicectomy for Persistent Hiccups." The society will be addressed, February 16, by Drs. Don Carlos Peete and Donald N. Medearis, Kansas City, on "Diagnosis and Treatment of Syphilitic Aortitis" and "Artificial Feeding of Infants," respectively.——Dr. Leslie C. Bishop, Wichita, addressed the Ford County Medical Society, Dec. 11, 1931, on hysteria.——At the meeting of the Harvey County Medical Society in Newton, Dec. 7, 1931, Drs. Lloyd O. E. Peckenschneider and Vern L. Pauley, both of Halstead, spoke on septicemia and preoperative treatment of the prostate, respectively.——Dr. William R. Dillingham, Salina, addressed the Saline County Medical Society, Dec. 10, 1931, on "Treatment of Normal Breech Presentation." Dr. Earl L. Vermillion, Salina, was elected president at this meeting.——Dr. John M. McWharf, Ottawa, among others, addressed the Anderson County Medical Society, Dec. 22, 1931, on the past and future of medicine.——Dr. Fred B. Kyger spoke on "Some Problems in Obstetrics" before the Golden Belt Medical Society at Manhattan, January 7, and Dr. Harry C. Berger, Kansas City, Mo., on "Visceroptosis in Children."——A round table discussion on improvements in medical and surgical treatment during 1932 was a feature of the meeting of the Wilson County Medical Society, January 11.——Dr. Paul S. Mitchell, Iola, will address the Sedgwick County Medical Society, Wichita, February 16, on "A Perspective and Aims of Our Society," and John Parkhurst, D.D.S., Iola, will discuss "Medical Legislative Problems." The society was addressed, February 2, by Drs. Thor J. Jager and Ernest M. Seydell, Wichita, on "Vesalius" and "Mastoiditis—Practical Considerations," respectively.

KENTUCKY

Society News.—A symposium on neoplasms of the urinary bladder was presented at the meeting of the Jefferson County Medical Society in Louisville, January 4, by Drs. James R. Stites, diagnosis; John T. Bate, Jr., treatment, and Joseph A. Bowen, neurologic aspects. Dr. Frank P. Strickler addressed the society, January 18, on "Surgery of the Common Bile Duct."——Dr. Eslie Asbury, Cincinnati, addressed the Bourbon County Medical Society, January 22, on treatment of fractures.——Drs. Irvin Abell and Adolph O. Pfingst, Louisville, addressed the Harlan County Medical Society, Harlan, January 23, on "Retrodisplacement of the Uterus" and "Eye Complications Following Fractures of the Skull," respectively.——At the quarterly meeting of the Southwestern Kentucky Medical Society, Hickman, February 4, speakers were Drs. Thomas D. Moore, Memphis, on "Instrumental Correction of Prostatic Obstruction"; Robert Lyle Motley, Memphis, "The Heart in Health and Disease," and Tinsly R. Harrison, Nashville, "Diagnosis of Organic Heart Disease."

Bills Introduced.—S. 142 and H. 224, to amend the pharmacy practice act, propose to abolish the registration of assistant pharmacists. S. 198 and H. 321, to amend the pharmacy practice act, propose to abolish the registration of assistant pharmacists and to allow present registered assistant pharmacists to be licensed, without examination, as registered pharmacists. S. 141 and H. 223, to amend the pharmacy practice act, propose that the board of pharmacy shall meet at least semiannually on the second Tuesday of January and July, instead of once in three months, as the present law provides. S. 145 and H. 162 propose a new dental practice act. S. 217 and H. 448 propose to create a state board of hairdressing and cosmetology examiners. Licentiates of the proposed board would be enabled, among other things, "to remove superfluous hair from the body of any female person." S. 149 and H. 246, to amend the law relating to chiropractic, propose to raise to $3 the annual renewal fee required of chiropractors. S. 290 proposes to authorize the establishment at each of the state hospitals for the insane a training course for attendants. H. 391 and H. 392 propose to create a board of barber and beautician examiners and to regulate the practice of barbering and beauty culture.

MASSACHUSETTS

Bills Introduced.—H. 188 proposes to create a board of magnetic healers' examination and registration and to regulate the practice of magnetic healing, defined as "the science of reviving and producing life and circulation in the nerve system and cells, so as to heal all nerve affections." No educational qualifications whatsoever are to be required of applicants. H. 787 authorizes courts to declare a marriage void where either spouse has been incurably insane for five years or more.

Survey of Health Education Activities.—The first comprehensive survey of health education activities in Boston is being undertaken. This study will include the activities of the Boston Health Department, the schools, city medical institutions, private agencies and commercial groups. The work will be carried on under the supervision of the health education committee of the Boston Health League, of which Clair E. Turner, professor of biology and public health at the Massachusetts Institute of Technology, is chairman.

Society News.—Mr. James M. Curley, mayor of Boston, addressed the William Harvey Society, January 8, on "What the City of Boston Is Doing to Promote the Public Health."——The Watertown Physicians' Society was addressed, January 4, in Watertown by Dr. Benjamin Tenney, Jr., Boston, on "Some Common Obstetrical Problems."——"Diagnosis and Treatment of Gonorrhea and Syphilis" was the subject discussed by Drs. Nels A. Nelson, James Dellinger Barney, Austin W. Cheever and Arthur C. Pearce, Boston, before the Waltham Medical Club, January 7.——The Harvard Medical Society was addressed, January 12, by Dr. William F. Rienhoff, Jr., Baltimore, on "Some Experimental Observations on the Thyroid Gland."——Dr. Harry C. Solomon, Boston, addressed the Essex South District Medical Society, January 6, on "Modern Treatment of Syphilis." The society was addressed, February 10, by Drs. Lincoln F. Sise and Harry H. Germain on "Selection of the Anesthetic for the Patient and Operation."——The Norfolk South District Medical Society was addressed, January 7, by Dr. William Reid Morrison on surgery of the stomach.——Dr. Joseph H. Fay, Melrose, addressed the Middlesex East District Medical Society, January 13, in Melrose, on "Treatment of Hip Fractures." Dr. Kenneth L. Maclachlan, Melrose, spoke on "Anemia in Obstetrics."——The South End Medical Club was addressed, January 19, by Dr. Harry W. Goodall, Boston, on "Carcinoma of the Colon."

MINNESOTA

Physician Sentenced to Penitentiary.—Dr. Torsten Ohrbom, St. Paul, Dec. 24, 1931, began to serve a sentence of three years and six months in the U. S. Penitentiary Annex, Fort Leavenworth, Kansas. The *Journal-Lancet* states that Dr. Ohrbom was sentenced "for faking government morphine certificates and obtaining the dope for his own use."

Society News.—Dr. Charles N. Spratt, Minneapolis, addressed the Hennepin County Medical Society, January 10, on "Treatment of Eye Injuries." The society was addressed, February 10, by Drs. Walter H. Fink and Albert H. Parks, Minneapolis, on "Optic Nerve Changes in General Diseases" and "Economic Therapeutics," respectively.——Dr. Clifton F. McClintic, Williamsburg, W. Va., among others, addressed the

Rice County Medical Society, Dec. 16, 1931, on headaches.——The Red River Valley Medical Society was addressed, Dec. 8, 1931, by Drs. Lyle L. Brown and Joseph G. Parsons, both of Crookston, on "Presentation of Some Bone Lesions in Children" and "Management of Mastoiditis," respectively.——At the meeting of the Minnesota Academy of Medicine, February 10, the speakers were Drs. Kenneth Bulkley on "Rôle of Oxyuris and Trichocephalus in the Etiology of Appendicitis"; Archa E. Wilcox, "Extraperitoneal Cyst," and Arthur E. Benjamin, "Nasal Catheter Suction Treatment of Postoperative Vomiting, Pain and Dehydration."

Violation of Basic Science Law.—Carl Beyer, operator of the Beyer System Clinic, Minneapolis, pleaded guilty to practicing healing without a basic science certificate, January 18, and was sentenced by Judge Reed of the district court to pay a fine of $200 or serve sixty days in the Minneapolis workhouse. The defendant paid the fine. According to the state board of medical examiners, Beyer has for several years been operating the Beyer System Clinic and claiming a successful treatment for diabetes, gallstones and other ailments over the radio and in local newspapers. As a result of this advertising, a farmer living near Shafer took his 16 year old boy to the clinic for treatment for diabetes. He paid Beyer $325 cash in advance. The boy's condition did not improve, and the father, learning that Beyer was not licensed, complained to the medical board. Beyer was arrested, January 8, and released on $1,000 bail. He was for some time prior to 1914 in the "patent medicine" business in Winnipeg, Manitoba, according to the state board. He claims to be from Austria and to be a dietitian.

MISSISSIPPI

Bill Introduced.—S. 100 proposes to prohibit the use of the words "drug store," "pharmacy," "apothecary," or similar names in places where no registered pharmacist is employed.

NEW JERSEY

Bill Enacted.—S. 7, approved by the governor, February 1, authorizes cities which maintain no municipal hospitals to enter into contracts with any regularly incorporated hospitals located in said cities and to pay such hospitals a sum not exceeding one mill on every dollar of assessable property located in the said cities for the purpose of maintaining and caring for such indigent patients as may be sent to such hospitals by the order of designated city officials.

Personal.—Dr. Berthold S. Pollak, medical director of the Hudson County Tuberculosis Hospital and Sanatorium, Secaucus, was the guest of honor at a reception at the sanatorium, January 31, marking his twenty-fifth anniversary in that position.——The Bergen County Medical Society held its annual dinner, Dec. 3, 1931, in honor of Dr. William L. Vroom, Ridgewood, who had completed forty-three years of practice. Dr. Vroom discussed the history of medicine in the county.

Extension Courses in Medicine.—For the third successive year the Medical Society of New Jersey and the extension division of Rutgers University, New Brunswick, are cooperating in the presentation of a series of graduate courses for physicians. The courses are being given in fifteen of the twenty-one counties of the state and are adjusted to meet the wishes of the county societies. They consist of eight weekly lectures, the starting dates covering the period from December 3 to April 7. Lecturers thus far announced include many physicians from the staffs of New York medical schools. The first course began, December 3, at Newton, Sussex County, with a schedule of four lectures each on fractures and newer drug therapy. Other subjects which will be used according to the desires of the local society include neurology, gynecology, pediatrics, traumatic surgery, obstetrics, gastroenterology and surgery. Twenty-four courses have thus far been arranged for the fifteen centers, with a likelihood of additional centers to be established and other courses to be added, according to an announcement from the university extension division.

Society News.—The Bergen County Medical Society has adopted a junior membership for the physician who has been practicing less than one year, with one fourth the regular annual dues.——The twenty-second annual conference of New Jersey Health Officials was held, February 5, at Trenton. Among the speakers was Carl E. Buck, Dr.P.H., field director of the American Public Health Association, New York, on public health administration by county health departments.——A symposium on obstetric subjects comprised the program of the Hudson County Medical Society, Jersey City, February 2, with the following speakers: Drs. Arthur W. Bingham, East Orange, Edward G. Waters and Samuel A. Cosgrove, both of Jersey City.——Dr. Henry B. Decker, among others, addressed the Camden County Medical Society, Camden, February 2, on recent advances in bacteriology.——Dr. Matthew White Perry, Washington, D. C., addressed the Atlantic County Medical Society, Atlantic City, February 12, on "Neglected Considerations Concerning Colitis."——Dr. Joseph Jordan Eller, New York, addressed the Monmouth County Medical Society, Long Branch, January 27, on "Diagnosis and Treatment of Malignant Lesions of the Skin."

Bills Introduced.—S. 47, to amend the dental practice act, proposes to permit the licensing of dental hygienists, who are to have the right "to mechanically remove calcareous deposits, secretions and stains from the exposed surfaces of the teeth and directly beneath the normal free margins of the gums and to polish the teeth" but are not to perform any other operation on the teeth or tissues of the mouth. S. 48 proposes to make it a misdemeanor for any person to secure medical and surgical treatment from any governmental or charitable hospital or institution, free or at reduced rates, by means of false representations with respect to his financial condition. A. 63 proposes to allow villages and townships, as well as boroughs and towns, to make appropriations to private hospitals. A. 68 proposes to permit cities having no city hospital to appropriate not exceeding $20,000 annually toward the maintenance of any private hospitals located therein. A. 72, to amend the workmen's compensation act, proposes to permit injured employees to select their own physicians. A. 73 proposes to create a board of barber examiners and to regulate the practice of barbering.

NEW YORK

New Cancer Laboratory.—A new biologic laboratory is being completed shortly at Springville, Erie County, for the State Institute for the Study of Malignant Disease, Buffalo. The building, which replaces an old structure, affords about 1,300 square feet of space on the main floor. It will house several thousand animals, chiefly mice, used in the experimental study of cancer. It will have facilities for chemical, microscopic and histologic work and for transplantation of tissue, injections and other procedures.

Health at Utica.—Telegraphic reports to the U. S. Department of Commerce from eighty-three cities with a total population of 36 million, for the week ended January 30, indicate that the highest mortality rate (25.4) appears for Utica and the rate for the group of cities as a whole, 11.5. The mortality rate for Utica for the corresponding week last year was 14.8 and for the group of cities, 15.1. The annual rate for the eighty-three cities for the four weeks of 1932 was 12, as against a rate of 14.4 for the corresponding period of the previous year. Caution should be used in the interpretation of weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have large Negro populations may tend to increase the death rate.

Bills Introduced.—S. 415 and A. 591, to amend the law requiring the licensing of private institutions for the treatment of the mentally deficient, propose that the commissioner of mental hygiene be authorized to license such institutions for a definite period. S. 450 proposes that all certificates of birth contain photographs of the finger prints of the mother and the foot prints of the child. S. 546 and A. 464, to amend the workmen's compensation act, propose, in effect, to make compensable any occupational disease contracted in any employment covered by the act. A. 584, to amend the workmen's compensation act, proposes, in effect, to permit an injured employee to select his own physician. A. 596 proposes to create a board of barber examiners and to regulate the practice of barbering.

New York City

Brickner Lecture.—Dr. Albert A. Epstein gave the second Walter M. Brickner Lecture at the Hospital for Joint Diseases, Tuesday, February 9, on "Surgery in the Diabetic."

Fifth Harvey Lecture.—Dr. Andrew C. Ivy, professor of physiology and pharmacology, Northwestern University School of Medicine, Chicago, will give the fifth Harvey Society Lecture at the New York Academy of Medicine, February 18, on "Factors Concerned in the Evacuation of the Gallbladder."

Perkin Medal Awarded.—Charles Frederick Burgess, Ph.D., chemical engineer, has been awarded the Perkin Medal for 1932 by the American section of the Society of Chemical Industry. This medal is presented each year to the "American chemist who has most distinguished himself by his services to applied chemistry," who is selected by a committee representing the Society of Chemical Industry, the American Chemical Society, the American Electrochemical Society, the American Institute of Chemical Engineers and the Société de Chimie Industrielle. Dr. Burgess, a native of Wisconsin, taught for a

number of years at the University of Wisconsin. He is the inventor of a process for the electrolytic purification of iron and many other chemical processes dealing particularly with storage batteries. He devised an apparatus for sterilizing liquids with nascent chlorine which has been used in hospitals to treat infected wounds and by explorers for sterilizing drinking water. The Perkin medal was founded in 1906 at the time of the Perkin semicentennial celebration of the coal tar discoveries and was first awarded to Sir William Henry Perkin himself. The presentation to Dr. Burgess was made, January 8, at a dinner of the interested societies in New York.

OHIO

Society News.—Drs. Paul M. Holmes and Barney J. Hein, Toledo, addressed the Putnam County Medical Society, Ottawa, January 5, on diagnosis of pulmonary tuberculosis and fractures, respectively.——Drs. Charles E. Held, Akron, and Marion D. Douglas, Jr., Cleveland, among others, addressed the Union Medical Association of the sixth district, Canton, January 13, on "Diabetes Mellitus—A Definition" and "Backache of Gynecological Origin," respectively.——At a meeting of the Stark County Medical Society, Canton, January 12, Dr. Clarence H. Heyman, Cleveland, spoke on fractures of the hip.——Dr. Julien E. Benjamin, Cincinnati, addressed the Hempstead Academy of Medicine, January 11, on "The Increase in the Death Rate from Heart Disease in the Fifth and Sixth Decades."——Drs. George T. Harding III and Donald E. Yochem made addresses on "Narcolepsy" and "Diagnosis and Treatment of Pernicious Anemia," respectively, before the Columbus Academy of Medicine, January 11.——Dr. Albert D. Frost, Columbus, discussed "Cooperation of the Oculist with the General Practitioner" at a meeting of the Ross County Medical Society, Chillicothe, January 7.——Drs. Milton B. Cohen and Roy W. Scott provided the program of the Cleveland Academy of Medicine, February 19, speaking on "Use and Abuse of Drugs in Asthma" and "Recent Advances in the Problem of Vascular Diseases," respectively.——Pediatricians of Cincinnati organized the Cincinnati Pediatric Society, January 15, with Dr. Albert J. Bell as president and Dr. Harold F. Downing, secretary.——Dr. Alfred Worcester, Waltham, Mass., addressed the Cincinnati Academy of Medicine, February 1, on "Care of the Dying."——Dr. Paul A. O'Leary, Rochester, Minn., will address the Cincinnati Dermatological Society and the specialty section of the Cincinnati Academy of Medicine, February 29, on "Therapeutic Problems of Syphilis."——Dr. James M. Pierce, Cincinnati, discussed "Nausea and Vomiting of Early Pregnancy" before the Cincinnati Obstetrical Society, February 11.——Dr. Charles Goosmann, Cincinnati, addressed the Montgomery County Medical Society, Dayton, February 5, on "Mistakes in Microscopic Diagnosis of Tumors."

PENNSYLVANIA

Society News.—Dr. Howard T. Phillips, Wheeling, W. Va., held a dermatologic clinic at the meeting of the Washington County Medical Society, Washington, February 10.——Dr. Barton C. Hirst, Philadelphia, addressed the Dauphin County Medical Society, Harrisburg, February 2, on recent studies in the causes of sterility.——Dr. Herbert F. Gross made the annual presidential address of the Harrisburg Academy of Medicine, January 19, on intestinal obstruction.——Dr. Alfred Friedlander, Cincinnati, addressed the Medical Forum of Pittsburgh, February 13, on "Clinical Applications of Recent Studies on Reticulocytes."——Dr. John J. Buchanan delivered an address on "History of Urology in Pittsburgh" at the February meeting of the Pittsburgh Urological Association.——Dr. George H. Shuman addressed an open meeting of the Pittsburgh Slit-Lamp Society, February 8, on "Controlled Versus Haphazard Methods of Applying Oblique Focal Illumination in Ocular Diagnosis."

Philadelphia

Annual Thomas Lecture.—The annual B. A. Thomas Memorial Lecture of the Philadelphia Urological Society will be delivered, February 15, by Dr. William F. Braasch, Rochester, Minn., on "Clinical Data in Connection with Polycystic Kidneys."

Bequest to University.—A bequest of $2,500,000 to the University of Pennsylvania for the erection of a hospital and an equal amount for an endowment was made public, February 2, when the will of Frederic S. Pepper, Jr., was probated. Mr. Pepper, a cousin of former Senator George Wharton Pepper, directed that the hospital be erected when the principal and accumulated income from his estate reached $5,000,000. It is to be built as a part of the University of Pennsylvania Hospital, according to the will, and will be for the "free care and treatment of sick and injured persons."

Joint Surgical Meeting.—The Philadelphia Academy of Surgery held a joint meeting with the New York Surgical Society, February 10, at the University of Pennsylvania. The following program of papers was presented: Drs. John B. Flick, "Spirochetal Infections of the Hand"; Calvin M. Smyth, Jr., "Treatment of Compound Fracture"; Eldridge L. Eliason, "An Operation for Inferior Radio-Ulnar Dislocation"; Alexander Randall, "Prevention of Postoperative Calculus in the Urinary Tract"; John Gibbon, "Kerr Technic in Anastomoses of the Colon"; George M. Dorrance, "Push-Back Operation for Cleft Palate," and John Stewart Rodman, "Chronic Cystic Mastitis or Abnormal Involution."

Society News.—The Philadelphia health department has recently discontinued its weekly bulletin, *Healthfax*, after five years of publication, for reasons of economy.——Dr. Josef B. Nylin delivered the weekly postgraduate seminar of the Philadelphia County Medical Society, February 12, on "Water as a Therapeutic Agent."——Dr. Stanley P. Reimann addressed the Pathological Society of Philadelphia, February 11, on "Neoplasms as the Result of Inheritable Chromosome Alterations" and Drs. Harold J. Stewart and Carl J. Bucher presented a paper on "Pulmonary Asbestosis."——Mr. Alexander Fleischer, secretary, Philadelphia Child Health Council, among others, addressed the Philadelphia Pediatric Society, February 9, with "A Report upon the Study of the Need for Breast Milk in Philadelphia."

SOUTH CAROLINA

Bills Introduced.—H. 1351 proposes to create a board of chiropractic examiners and to regulate the practice of chiropractic, defined as "the science of palpating and adjusting the articulation of the human spinal column by hand only." S. 1124 proposes to provide compensation to employees for disability or death resulting from injury arising out of and in the course of their employments. Compensation is not to be accorded for occupational diseases nor are injured employees to be permitted to choose their own physicians.

SOUTH DAKOTA

University News.—The medical library of the late Dr. Frank A. Swezey, Wakonda, has been presented to the University of South Dakota School of Medicine by Mrs. Swezey. It comprises several hundred volumes, pamphlets and notebooks.

Society News.—Dr. Guy E. Van Demark, Sioux Falls, addressed the Watertown District Medical Society, recently, at Watertown on "Fractures of the Upper Extremity."——At the meeting of the Sioux Falls Medical Society, Dec. 8, 1931, Drs. Sidney A. Slater, Worthington, Minn., spoke on "International Post-Graduate Tour of Europe"; Thomas J. Billion, Sioux Falls, "Treatment of Hemorrhoids," and John B. Gregg, Sioux Falls, "Foreign Bodies in the Lung."——At the annual meeting of the Yankton District Medical Society, Dec. 15, 1931, Drs. Robert H. McBride and Joseph E. Dvorak, Sioux City, Iowa, among others, spoke on "Infectious Diseases of Children."

TEXAS

Annual Clinic.—The annual Fort Worth Medical and Surgical Clinic of the Tarrant County Medical Society will be held, February 23, in Fort Worth, with Dr. William Paul Holbrook, Tucson, Ariz., as the guest of honor. Dr. Holbrook will make an address at the annual banquet and give a clinic on arthritis. Other clinical presentations will be on heart disease, diverticulitis, cancer, disabilities of the foot, diabetes, acute intestinal obstruction, pulmonary tuberculosis, goiter, diseases of the eye, ear, nose and throat, and modern laboratory methods.

WEST VIRGINIA

Physician Sentenced.—Dr. Latta Arthur Crandell, formerly of Tioga, was recently sentenced to two years and six months in the United States Penitentiary Annex, Fort Leavenworth, Kansas, and committed, January 13. He pleaded guilty to a narcotic charge.

Society News.—Dr. William Wayne Babcock, Philadelphia, addressed the Ohio County Medical Society, Wheeling, February 5, on "Newer Methods in the Surgical Treatment of Certain Diseases of the Heart and Great Blood Vessels."——Dr. William C. D. McCuskey, Wheeling, addressed the Marshall County Medical Association, January 12, on "Management of Prostatic Obstruction."——Drs. Dorsey Brannan, Morgantown, and Reginald S. Rilling, Pursglove, addressed the

Monongalia County Medical Society, Morgantown, January 5, on the Aschheim-Zondek test for pregnancy and uterine hemorrhage, respectively.——Drs. Vincent T. Churchman and Walter W. Point, Charleston, addressed the Logan County Medical Society, Logan, January 20, on "Industrial Eye Injuries" and "The Average Normal Case in Obstetrics," respectively.——Speakers at the January meeting of the Mingo County Medical Society, Williamson, were Drs. Ray M. Bobbitt and Francis A. Scott, Huntington, on "Urological Symptoms" and "Derangements of the Knee Joints," respectively.——The Mercer County Medical Society held a symposium on pernicious anemia at its meeting in Bluefield, January 21.——The Kanawha County medical and dental societies held a joint meeting in Charleston, January 5.——Drs. Clint W. Stallard, Montgomery, and Joseph M. Spinks, Mount Hope, addressed the Fayette County Medical Society, Oak Hill, January 12, on "Purulent Arthritis" and "Treatment of Incomplete Abortion," respectively.

GENERAL

American Board of Obstetrics and Gynecology.—A written examination of the American Board of Obstetrics and Gynecology will be held in nineteen cities of the United States and Canada, March 26. An oral and clinical examination is scheduled, May 10, in New Orleans. Further information may be had from the secretary, Dr. Paul Titus, 1015 Highland Building, Pittsburgh.

Scholarship in Health Education.—The National Tuberculosis Association announces that a scholarship of $500 is available in the field of health education in the department of biology and public health at Massachusetts Institute of Technology, Boston. Applicants should have basic training in mathematics, physics, chemistry and biology. Awards will be based on the nature and quality of the previous academic work of the applicant, personality qualifications and need of the financial aid. Applications should be sent before May 15 to the Child Education Service, National Tuberculosis Association, 450 Seventh Avenue, New York. The scholarship will be awarded in June.

Warning Against Impostor.—It has been reported that a man who gives his name as "Dr. Phares" of Evansville, Ind., has recently been hitch-hiking in the Southwest, representing that he is trying to find a position as surgeon, and soliciting the help and sympathy of the medical profession. On receipt of this information, inquiry was made by telephone and it was learned that Dr. John W. Phares of Evansville is regularly at his post of duty in that city, being a member of his local and state medical societies, and a Fellow of the American Medical Association. The itinerant individual, first above referred to, therefore is evidently an impostor. He is described as being 50 years of age or more, fairly well dressed and a good talker. In at least one town he is said to have visited every drug store, trying to buy paregoric. The profession should beware of impostors. In case of doubt, it would be well to telegraph or write the American Medical Association.

Prevalence of Communicable Disease.—Smallpox has been reported from various parts of the Middle West in recent newspaper dispatches. The appearance of five cases in Kalamazoo, Mich., January 16, led the health officer to order all students of the Woodward Avenue School to be vaccinated. Three virulent cases reported in a settlement near Richmond, Ky., January 15, caused the health officer to vaccinate all unprotected persons in the community. Twenty-four cases were reported at Anita, Iowa, January 2.——Twenty-three cases of measles were reported at Spring Lake, Mich., January 21.——In New York City, the health commissioner reported 1,700 cases of scarlet fever during January, with six deaths.——The weekly report of the U. S. Public Health Service for the week ended January 16 showed fewer cases of smallpox, poliomyelitis and meningococcus meningitis than for the corresponding week last year; almost the same number of cases of scarlet fever and measles, and increases in typhoid and diphtheria. In eighty-five cities there were 851 deaths from influenza and pneumonia, as compared with 1,530 for the corresponding week of 1931.

Society News.—The eleventh annual session of the American Congress of Physical Therapy will be held in New York, September 6-9.——Dr. Samuel McC. Hamill, Philadelphia, was elected president of the American Child Health Association at the annual business meeting, Dec. 10, 1931, in New York. Dr. Philip Van Ingen, New York, is secretary. President Hoover is now honorary president.——The next meeting of the Pacific Northwest Medical Association will be held in Spokane, Wash., June 27-29, with headquarters at the Davenport Hotel. The speakers will include Drs. Henry C. Bazett, Philadelphia; Samuel R. Cunningham, Oklahoma City; Harry Gideon Wells, Chicago; William J. Kerr, San Francisco; Philip H. Kreuscher, Chicago; Charles B. Wright, Minneapolis; Temple S. Fay, Philadelphia; Henry E. Michelson, Minneapolis, and Richard T. Atkins, New York.——The Catholic Hospital Association of the United States and Canada will hold its seventeenth annual convention at Villanova College, Villanova, Pa., June 21-24.——The American Orthopsychiatric Association will hold its annual meeting in Baltimore, February 18-20, with headquarters at the Lord Baltimore Hotel. A feature of the meeting will be a symposium on the contribution of psychology to the understanding of problems of personality and behavior.

Southeastern Surgical Congress.—The third annual assembly of the Southeastern Surgical Congress will be held in Birmingham, March 7-8, at the Tutwiler Hotel. The program will include addresses by Drs. William Wayne Babcock, Philadelphia, "Operative Treatment of Carcinoma of the Rectosigmoid with Methods for Elimination of Colostomy"; Edgar G. Ballenger, Atlanta, Ga., "Diagnosis of Surgical Affections of the Kidney and Ureter"; Vilray P. Blair, St. Louis, "Surgery of the Ocular Appendages and Related Structures"; Addison G. Brenizer, Charlotte, N. C., "Observations Drawn from 2,500 Thyroidectomized Cases with Special Reference to Hyperthyroidism and Hypothyroidism"; Willis C. Campbell, Memphis, Tenn., "Central or Intracapsular Fractures of the Neck of the Femur"; George W. Crile, Cleveland, "Technic and Clinical End-Results of Denervation of the Adrenal Gland"; Frank H. Hagaman, Jackson, Miss., "A Practical Treatment for Fractures of the Clavicle"; Carl A. Hedblom, Chicago, "Diagnosis and Treatment of Diaphragmatic Hernia with Special Reference to Selective Treatment"; Chevalier Jackson, Philadelphia, "Cancer of the Larynx"; C. Jeff Miller, New Orleans, "Gynecologic Backwash of Obstetrics"; Fred W. Rankin, Rochester, Minn., "Diagnosis and Treatment of Carcinoma of Rectum and Rectosigmoid"; Edwin Laurence Scott, Birmingham, "Surgical Care of Infantile Paralysis"; Walter Simpson, Dayton, Ohio, "Surgical Aspect of Undulant Fever," and George T. Tyler, Jr., Greenville, S. C., "Avertin Anesthesia." The Southeastern Surgical Congress was organized, Jan. 7, 1930. The territory covered includes Alabama, Florida, Georgia, Mississippi, North and South Carolina and Tennessee.

Ten Years of Mental Hygiene.—The results of the educational work in mental hygiene carried on in recent years are seen in a nation-wide inventory of facilities for study and management of mental disorders outside of institutions, made public by the National Committee for Mental Hygiene. In 1920, mental hygiene and child guidance clinics were comparatively rare. The study just completed shows there are 674 clinics providing regular mental health service to the public in thirty-four states. Most of these have come into existence since 1922, when the National Committee for Mental Hygiene and the Commonwealth Fund first joined forces for the development of child guidance work. Of the 674 clinics listed, 232 are child guidance clinics and the others are mental hygiene clinics handling both children and adults. More than 50,000 children and 36,000 adults were treated for behavior disorders and mental problems during the past year. The child guidance movement, the report points out, has come to command a recognition peculiarly its own and a popularity that has placed it in the forefront of the whole mental hygiene movement. The committee believes that this expansion of mental hygiene facilities is contributing to the prevention of breakdowns necessitating admission to hospitals. A directory of these clinics compiled by the Commonwealth Fund, now in course of publication, will give complete information concerning their services and will also describe other mental hygiene activities in each state. A table showing the distribution of child guidance clinics in cities of more than 150,000 population is included in the committee's inventory. A rating was adopted on the assumption that for every 200,000 of population there should be at least one clinic having the combined full time service of a psychiatrist, psychologist and two psychiatric social workers. According to this rating, Worcester, Mass., has the largest pro rata service among the cities; it is credited with 130 per cent. San Francisco is the largest city in the United States having practically no child guidance service.

Medical Bills in Congress.—*Change of Status:* S. 1690 has been favorably reported to the Senate, with an amendment, providing medical care and hospitalization for members of the National Guard, Organized Reserves, Reserve Officers' Training Corps and citizens' military training camps who are injured or contract disease while engaged in military training. Hearings were held, February 4 and 5, by the Senate Commerce Committee, on S. 572, to provide that the United States shall cooperate with the states in promoting the general health of the rural population of the United States and the welfare and

hygiene of mothers and children. *Bills Introduced:* Senator Bingham, Connecticut, has proposed an amendment to S. 3090, relating to medicinal liquor, which would permit a physician to prescribe beer for medicinal purposes. S. 3404, by Senator Broussard, Louisiana, to erect a veterans' hospital at or near New Orleans. S. 3410, by Senator Nye, North Dakota, to erect an administration building at the veterans' hospital, Fargo, N. D. H. R. 8626, by Representative Norton, New Jersey, to provide hospitalization and medical treatment at hospitals and relief stations of the United States Public Health Service for certain seamen. H. R. 8629, by Representative Overton, Louisiana, to erect a 250 bed addition to the veterans' hospital, Alexandria, La. H. R. 8680, by Representative Crail, California, to provide a uniform pension law for disabilities incurred in war service and granting pensions to certain soldiers, sailors, marines and nurses who served the United States in time of war. H. R. 8756, by Representative Connery, Massachusetts, to erect a veterans' hospital at or near Boston. H. R. 8760, by Representative Hastings, Oklahoma, to erect a 200 bed addition to the veterans' hospital, Muskogee, Okla. H. R. 8762, by Representative Hardy, Colorado, to recondition buildings at the veterans' hospital, Fort Lyon, Colorado. H. R. 8905, by Representative Fulbright, Missouri, and H. R. 8920, by Representative Johnson, Missouri, to define the term "willful conduct," as used in the World War Veterans' Act, to include only intentional self-inflicted injury or conduct engaged in for the purpose and with the intent of developing and causing injury or disease, or aggravation thereof, or causing recurrence of disease. H. R. 8921, by Representative Lichtenwalner, Pennsylvania, to erect a veterans' hospital in Lehigh County, Pennsylvania. H. R. 8924, by Representative Owen, Florida, and H. R. 7228, by Representative Reid, Illinois, to provide pension for contract surgeons.

CANADA

Trachoma Among Alberta Indians.—The provincial government has recently set forth new regulations for the control of trachoma among the Indians of Alberta. Any house in which a person suffering from trachoma is found and in which proper precautionary measures are not being used may be quarantined. If in the opinion of the board of health treatment is necessary, the board may appoint medical and nursing staffs to procure eradication of the disease from any area within the province, according to the regulations. It is said that on one reservation west of Calgary almost one fourth of the population of 600 has trachoma. In view of the fact that the Indians travel constantly through other districts, this condition is considered a serious menace.

Hospital News.—The new St. John (N. B.) General Hospital was opened for patients, Oct. 16, 1931.——A new wing has recently been opened at St. Joseph's Hospital, London, Ont. It contains 115 beds, including a complete obstetric department, operating rooms for otolaryngology, a children's department and a laboratory suite.——Dr. Edleston H. Cooke, superintendent of the Alberta Provincial Mental Hospital, Ponoka, for twenty years, has resigned to engage in private practice. Dr. David L. McCullough, assistant superintendent, has been transferred to the provincial training school at Red Deer as acting superintendent. Dr. Charles A. Baragar is acting superintendent at Ponoka and Dr. G. A. Davidson of the Brandon Mental Hospital has been appointed to succeed Dr. McCullough.

Dr. Primrose Retires as Dean at Toronto.—Dr. Alexander Primrose, dean of the University of Toronto Faculty of Medicine since 1920, retired from that position, Dec. 31, 1931. Dr. Primrose first came to the University of Toronto in 1889 as demonstrator in applied anatomy. He was made associate professor in that department in 1892 and professor in 1896, a position he held until 1907. In addition he was made associate professor of clinical surgery in 1897 and professor in 1918, holding that chair until his retirement. Dr. Primrose served during the World War first as senior surgeon with the University Hospital unit and later as consulting surgeon to the Canadian forces in England. He is at present president-elect of the Canadian Medical Association. Dr. John G. Fitzgerald, professor of hygiene and preventive medicine, and director of Connaught Laboratories, has been appointed to succeed Dr. Primrose.

CORRECTION

"Hemihypertrophy of Extremities Associated with Congenital Arteriovenous Fistula."—In the article on this subject by Dr. Bayard T. Horton (THE JOURNAL, January 30), the sentence beginning in the fifth line after figure 1 on page 375 should read: "The anatomic age of the left hand was approximately 5 years, but the subject's age was only 3 years."

Foreign Letters

LONDON

(From Our Regular Correspondent)

Jan. 9, 1932.

The Radium Treatment of Cancer

The medical research council has published the reports received from the various centers to which radium has been supplied from the National Radium Trust. Arranged according to localities, the principal results may be summarized as follows:

CANCER OF THE BREAST

At the Middlesex Hospital the best results were obtained with radium used at as great a distance as 6 cm. In the early stages, cancer of the breast appears to be unusually responsive to suitably planned surface radium therapy. At St. Bartholomew's Hospital there has been a tendency to irradiate more widely around the tumor. The patients who die succumb to distant metastases, and in almost all cases there has been great local improvement in or disappearance of the primary tumor.

CANCER OF THE UTERUS

In the treatment of cervical cancer, modifications of the Stockholm or Paris technics have been used. At the Royal Infirmary, Cardiff, fistula formation occurred in twenty-five cases. Expectation of life was longest in rectal, next in vesical, and least in double fistulas. At the London Hospital, where Radiumhemmet technic is followed, high voltage x-rays are used only for recurrence. When the parametria are invaded especially with fixation, the Marie Curie Hospital finds that supplementary external irradiation increases the number of five year cures. In the treatment of cancer of the body of the uterus the technic has been recently altered by giving smaller intra-uterine doses. Radon cylinders are placed in each cornu, radium tubes from fundus to internal os, and radium plaques in fornices. X-rays are given two weeks after treatment. Of forty-one patients treated since 1925, thirty-one are now living.

CANCER OF MOUTH, NOSE AND THROAT

At the Birmingham General Hospital it has been noted that the date and appearance of gland metastases bear no relation to the size of the primary growth. When the glands are enlarged and inoperable, the practice of removing part of a large mass followed by irradiation when the wound is healed has been abondoned. It is found better to expose the growth by reflecting skin and subcutaneous tissue and to insert needles. Since 1926, treatment has been given to 122 patients, with 43 clinical cures, 8 improved, 17 not improved, and 54 deaths. Clinical cures have been obtained in the following percentages: tongue (anterior two thirds), 32; (posterior two thirds) 24; floor of mouth, 15; cheek and lip, 52. In the throat the most hopeful sphere for radium proved to be extensive, septic, inoperable growths of the pharynx and hypopharynx which tend to invade the larynx. Radon was preferable to radium on account of the retching and discomfort provoked by the strings. Radon seeds were inserted around the growth and a radium collar was fitted, carrying needles parallel to the sternomastoid. Cancer of the esophagus has proved disappointing, but at University College Hospital one case showed improvement eight months after treatment.

CANCER OF THE RECTUM

At the General Hospital, Birmingham, fifty cases have been treated. Whenever possible, preliminary colostomy is performed. The usual technic is to remove the coccyx and lower part of the sacrum and insert needles around the growth, long needles being placed parallel to the mesorectum. Unsatisfactory results are attributed to the fact that rectal cancer is much

more resistant than squamous epithelioma of the mouth. At St. Bartholomew's Hospital, intraperitoneal radon is given to the glandular area at the time of the colostomy. Attention is drawn to the possibility of inoperable cases becoming operable as a result of radium therapy.

CANCER OF THE BLADDER

At St. Peter's Hospital, out of fifty-eight patients twenty-eight had insertion of radon seeds by cystoscope and thirty open operation. In the latter a combination of diathermy and radium gave immediate relief. All the cases were advanced and none were cured, but symptoms were relieved for from six to eighteen months. It was found that a hemorrhage, however severe, could be controlled by a large dose of radiation of the whole malignant mass. For the prostate the technic of Herbst (suprapubic cystotomy and irradiation of the bladder base and prostate from within) was followed, but it is too soon yet to state its value.

BRAIN TUMORS

At the Royal Infirmary, Manchester, five cases of hemispherical glioma were treated by external radiation. Two of the patients are in good health and able to work, two are dead, and one is a complete invalid. It is concluded that gliomas are not especially radiosensitive and that the accurate placing of needles is difficult, as is the avoidance of structurally important areas at the boundary of the tumor.

SARCOMA AND LYMPHOSARCOMA

Good results were obtained in 50 per cent of cases of spindle cell sarcoma, in 41 per cent of round cell sarcoma and in 23.5 per cent of lymphosarcoma.

The Alcohol Problem

The royal commission appointed in January, 1930, to inquire into the working of the laws relating to the sale and supply of alcoholic liquors, to investigate the social and economic aspects of the question and to report on proposals for amending the law has presented its report, which has just been published. It constitutes a notable contribution to one of the most controversial social problems.

DECREASE OF DRINKING

A definite increase in the consumption of intoxicants occurred in the last twenty years of the nineteenth century, but the contrast between 1899 and 1929 is remarkable. In the former year the consumption of beer was 32.5 gallons a head; in the latter it had fallen to 16.4. The fall in the consumption of spirits was yet more remarkable—from 0.97 proof gallon a head to 0.25. Since the war there has been a rise in the consumption of wine, which is attributed to some extent to the increased duty on spirits, which now is five times as great as it was before the war. But it is considered that, despite the great improvement, excessive drinking still persists, and the commission is not satisfied that the situation can be sufficiently met by trusting to the general progressive tendencies of the age. It is noteworthy that of the 189 witnesses examined not one suggested that prohibition was a practicable proposition for this country. The demand was made before the commission that the inhabitants of newly developed areas should be given control of the licensing of saloons in their areas (a restricted form of what has long figured in the liquor controversy as "local option") and is favorably reported on.

The Curability Rate of Cancer

The great preponderance of cancer of the lip, tongue, mouth, pharynx and larynx in men and of the reproductive organs in women is pointed out in a report to the minister of health, by Dr. Janet E. Forber, on 2,000 hospital cases in East London. In a foreword the chief medical officer of the ministry, Sir George Newman, says: "The present report shows that if account be taken of the cases not submitted to treatment, the curability rate for all cases of cancer is about 21 per cent. These data strongly emphasize the need for educational effort to secure that more patients in the early stage should avail themselves of specialized treatment." In her report, Dr. Forber says that there is no shortage of medical or nursing care and that there was no delay of admission to a municipal hospital of any one who applied. There was no delay on the part of physicians in obtaining further advice and aid by referring the patients to hospital. The mean duration of inpatient care indicates that at least the final stages are seldom long, the mean duration being 2.28 months for all cases, under one month for 46 per cent, while only 7 per cent reached six months. There is some indication, contrary to the prevalent belief, that the duration is shorter in the aged.

PARIS

(From Our Regular Correspondent)

Dec. 30, 1931.

Present State of Gold Therapy in France

Gold salts continue to be employed in France for the treatment of tuberculosis, especially the stationary and slowly developing types. One proprietary preparation is widely employed in the sanatoriums, but no one longer believes that it has a specific action on the Koch bacillus or that it exerts any other influence than to reinforce in a peculiar manner the defense of the organism against attacks, and indirectly facilitate spontaneous recovery by its own means. But gold salts, in their various forms, are used likewise in the treatment of lupus erythematosus, and articles by Pinard, Jeanselme and Burnier, Pautrier and Georges Levy, and Clément Simon, have announced numerous cases of amelioration and recovery—an average of about 60 per cent. All tests of the efficacy of gold preparations in leprosy have been fruitless. The trials were unfavorable also as carried out by Sézary, who reports that the use of gold in leprosy sometimes provokes an evolutive outbreak. Jansion observed in one case a rapid cachexia followed by death. Jeanselme and Burnier found gold absolutely inactive in leprosy patients. Better results were obtained in the treatment of syphilis, an old method applied formerly in France solely to syphilitic bone lesions. Levaditi's researches on the action of "Sanocrysin" in venereal spirochetosis induced experimentally in the rabbit, and the researches of Fournier and Mollaret, and of Jeanselme and Burnier, have been so favorable that gold, in the treatment of syphilis, has acquired a place alongside arsenic and bismuth. Jeanselme reports, as the result of "Sanocrysin" treatment, rapid cures of lesions that had resisted an intensive and prolonged arsphenamine treatment. Nevertheless, according to Jeanselme, gold does not render the Wassermann test negative so consistently as do arsenic and bismuth. Jeanselme suggests that gold treatment be reserved for cases of syphilis that have proved resistant to other medicaments. The results, moreover, have much improved since, following the example of Fournier and of Mollaret, oil injections have been employed. A precise indication is furnished by the coexistence in the patients of syphilis and tuberculosis. The latter evolves rapidly since treatment with mercury, arsenic or bismuth compounds has been instituted. In Lyons, Cordier and Gate found that in such patients oral therapy dispels all the syphilitic manifestations with remarkable rapidity, the evolution of tuberculosis not having exerted any influence, unless favorable. Interesting results have been secured in France also in the treatment of recurrent fever.

The Institute of Criminology

The Institute of Criminology in Paris has announced that on April 3 it will open a comprehensive course dealing with scientific police work, under the direction of Mr. Balthazard, pro-

iodine content of the thyroid increases, the iodine content of the blood diminishes, the basal metabolism is low (16 per cent lower than in control dogs), and a prolonged aqueous diuresis appears. The symptoms corresponding to this period are specifically caused by the absence of the anterior lobe of the hypophysis removed at total hypophysectomy. Hypothyroidism is directly caused by insufficiency of the hypophysis.

Congress of Surgery

The third annual congress of surgery of Argentina met, Oct. 12, 1931, at the Facultad de Ciencias Médicas of Buenos Aires, under the chairmanship of Professor Romagosa of Cordoba. Members of the medical faculties of several universities of Argentina attended the congress. There was an exposition of surgical apparatus. The topics discussed were "Complications and Results in the Treatment of Fibromyoma of the Uterus," by Drs. S. Marino and A. J. Bengolea; "Treatment of Fractures of the Forearm," by Drs. A. F. Landivas and M. Ruiz Moreno, and "Cancer of the Large Intestine, Not Including Cancer of the Rectum," by Drs. O. Copello and A. Ceballos.

Meeting of Regional Pathologists

The seventh meeting of the Sociedad Argentina de Patología Regional del Norte was held recently in Tucumán, with a large attendance of local and foreign physicians. The meeting was organized by Dr. S. Mazza, head of the Misión Universitaria de Patología del Norte, with headquarters and laboratories at Jujuy. Professor Nicolle of Tunis spoke on the transmission of exanthematous typhus by rats in Mexico, Dr. Catanei of Tunis on blastomycosis, and Dr. J. A. Domínguez on the progress in medicine made by the natives of Central and South America before the Spanish conquest. Drs. Bonorino Udaondo and Maissa discussed radiologic diagnosis and treatment of diseases of the liver and spleen; Drs. Talice and Mackinnon of Montevideo, mycosis of the external ear; Drs. Mazza and Palamedi of Buenos Aires, Pinto of Rio de Janeiro, and Theodor of Jerusalem, diseases caused by Coccidioides; Dr. Mello of Nova Goa, diarrhea caused by Flagellata; Drs. Delamare and Gatti of Asunción, the presence of spirochetes in the pleural fluid; Drs. Mazza and Alvarado, radiology of the colon in dysentery; Drs. Mazza and Villagrán, mycetoma of the foot, and Drs. Niño and Vera y Vivoli, several types of mycosis. One of the speakers said that the negativity of native Mataco Indians to the Dick test points to their being immune to scarlet fever. Dr. Villagrán described the characteristics of a special type of dermatosis caused by the Urundel tree. Drs. Luna and Canal Feijóo of Santiago reported a case of autochthonous Brucella infection in Santiago. Dr. Mazza described his experiments of serial transmission of Trypanosoma cruzi into an armadillo. Dr. Romaña isolated the same organism from a weasel of the genus Didelphis paraguayensis and from a tatou. Several articles were presented on Trypanosoma infection in monkeys, birds, and also in some species of Andean rodents. Speaking on the treatment of malaria, Drs. Alvarado and Mazza advocated the use of plasmochin.

News of the Academy

The Academia de Medicina of Buenos Aires recently held a meeting in memory of the late Dr. E. Cantón. Drs. Marotta and Jorge were recently appointed professors of surgery of the Academia de Medicina of Buenos Aires to fill vacancies left by the late Prof. E. Cantón and by Dr. A. Gandolfo.

Drs. A. Navarro and L. Morquio of Montevideo were recently appointed honorary academicians of the Academia de Medicina of Buenos Aires.

Deaths

Dr. J. Llambías, director of the Instituto de Anatomía y Fisiología Patológicas of Buenos Aires, aged 62.

Dr. P. Arata, former head of the chemical laboratories of the Faculty of Medicine of Buenos Aires.

AUSTRALIA

(From Our Regular Correspondent)

Dec. 22, 1931.

Hay Fever in New Zealand

Dunedin is overshadowed by a heavy cloud of grass pollen during the late half of December and throughout January and the early half of February. Exposure of pollen plates, and a field survey made by C. E. Hercus and M. N. Watt of the department of bacteriology, University of Otago, and reported in the *New Zealand Medical Journal* for December, 1931, show that the grasses chiefly responsible are, in order of pollinating, cocksfoot, Yorkshire fog, both perennial rye and Italian rye, crested dogstail, timothy, and brown top, the latter being practically the only grass pollinating during the latter half of the aforementioned period. Prior to the peak period the only important grasses pollinating are Poa annua, Poa pratensis, twitch, and sweet vernal; the latter is extremely abundant, a profuse pollinator, but happily its period of intense pollination is relatively short, a matter of some three weeks or so. In addition to the pollens already specified, pollens of poplar, ash, broadleaf, plantago, native birch, and manuka were deposited on the plates in fair abundance.

From a study made of cutaneous reactions in 529 patients, it was found that cocksfoot is the most important grass excitant. As regards pollens other than grasses, the most frequent excitants were acacia, wattle, maize, plantago, manuka, Pinus insignis and macrocarpa. An interesting observation was that the reactivity of the skin varies according to its texture. In several cases it was found that with the same extract a moderate positive reaction on the lower aspect of the forearm became a strongly positive reaction if the more delicate skin of the upper arm was used. For strictly comparable results the skin of the lower half of the forearm should therefore be avoided.

An ascertainable family history of hypersensitiveness was present in 80 per cent of cases. Though the importance of the hereditary factor is recognized in most cases of naturally occurring hypersensitiveness in man, it is not necessarily always operative. Several cases have come under notice in which the family history had been negative and contact with an excessive concentration of the specific excitant had apparently produced hay fever.

As regards the results of treatment, the authors state that an exact evaluation of the results of any form of treatment is always a matter of great difficulty. In endeavoring to assess the value of the specific treatment of hay fever, the usual difficulties are increased by the number of variable factors peculiar to this therapy. Such factors as the correct selection of the exciting specific agent, the constancy of the strength of the therapeutic extract, the time of treatment in relation to the appearance of symptoms, and the method and size of dosage must all be duly considered. With these considerations in mind it will be at once realized that the final assessment cannot be made until a large number of cases have been carefully studied over a period of years. The results of treatment are, on the whole, most encouraging. The fact that 102 of the patients have returned for further treatment is, in itself, an important indication that the treatment is of value. Fifty per cent of these have returned during three, four and five hay fever seasons. Out of a total of 286 patients, 94, or 32 per cent, were completely free from symptoms; 146, or 51 per cent, received considerable relief, and 30, or 10 per cent, moderate relief, whereas 16, or 5 per cent, failed to derive any benefit. Constitutional reactions occurred in 91, or 31 per cent, of the cases treated. The pollen asthmas have shown a higher percentage of complete relief from symptoms than the pure hay fever cases. The treatment was entirely preseasonal by either the slow or the intensive method, or partly seasonal and partly preseasonal, or purely seasonal. One course of treatment, however successful, would not produce a permanent immunity.

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Chair of Obstetrics at University of Otago

Dr. Joseph Bernard Dawson, M.D., F.R.C.S., has been appointed professor of midwifery and gynecology in the University of Otago at a salary of £2,000 per annum. The newly appointed professor is 45 years of age and of British birth and education, having received his professorial training at the University of Birmingham and at St. Bartholomew's Hospital. After graduation from the University of London, he engaged in postgraduate studies in order to obtain the higher degrees in medicine and surgery. During this time he held a number of resident appointments in the Birmingham hospitals, the Children's Hospital, Brighton, and St. Mark's Hospital, London. Besides systematic courses of lectures in midwifery and gynecology, his duties will cover the medical control and supervision of the maternity hospital and of the practical teaching of obstetrics (including antenatal and postnatal clinics and teaching), and the duties, operative and clinical, attaching to the position of gynecologist to the Dunedin Hospital, including the practical teaching in the subject of gynecology. It is the wish of the Otago University council that Dr. Dawson should, as soon as possible, spend approximately six months in visiting and in studying the methods adopted in the more important obstetric institutions in Great Britain, Ireland, the continental countries (including Holland and Denmark), the United States and Canada.

Statistics on Poisoning

As a measure of the control exercised over the distribution of poisonous substances and as an index of the suicidal tendencies of the population (six million), it is of interest to review the Australian statistics on poisoning, as revealed in the report for 1930 of the Commonwealth statistician. Suicides by solid or liquid poisons (noncorrosive) have taken a sudden leap to 192 cases, comprising 148 in males and 44 in females. These figures compare with 113 and 32, respectively, for 1929. Suicides by corrosive substances totaled 79, of which 49 cases were in males and 29 in females. This group is also higher by 9 cases than the previous year's total. Suicide by poisonous gas seems to have developed an alarming popularity. In 1927 there were only 16 cases from this cause. The following year twice as many such cases were recorded, and in 1929 there was a further increase to 37. Finally, 1930 shows a sharp rise to 58. Poisoning by food accounted for 21 deaths, as against 27 in 1929, and venomous bites and stings were responsible for 17 deaths, as compared with 14 cases in the previous year. Accidental absorption of irrespirable or poisonous gas was fatal in 25 cases (2 more than in 1929 and 14 less than in 1928). Accidental poisonings, happily, show a decline. The 1930 total of 63 deaths under this heading contrasts with 76 in 1929 and was made up of 47 males and 16 females. While there is apparently a decrease in the number of accidental poisoning cases, suicides show a marked upward tendency. There is a possible connection between these deaths and the state of trade and industry. The ages of suicides ranged between 15 and 80 years in the case of males, and between 13 and 64 years for females. In 1929 the largest number came, both for males and for females, from those aged between 35 and 50. In 1930, however, the greatest number of male suicides occurred at ages from 35 to 60, whereas for females the ages dropped to between 18 and 24 years.

Marriages

JOHN LAWRENCE RIKER, New York, to Miss Helene Beaudrais of Yonkers, N. Y., January 30.

WADE THOMAS PARKER, Fayetteville, N. C., to Miss Elizabeth Sikes Blue, January 26.

SYDNEY ROSENTHAL to DR. ZELDA I. MARKS, both of Newark, N. J., February 7.

Deaths

Burton Alexander Randall ✠ Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1880; emeritus professor of otology at his alma mater, assistant demonstrator of histology, 1880-1882, and professor of ear diseases, 1891-1924; professor of otology at the graduate school of medicine; member of the American Laryngological Association and member and past president of the American Otological Society; eye and ear surgeon to the Episcopal Hospital, 1882-1891, Methodist Hospital, 1896-1901, and Children's Hospital, 1885-1905; joint author of "Photographic Illustrations of the Anatomy of the Ear," 1887, and "American Textbook of Diseases of the Eye, Ear, Nose and Throat," 1899; aged 73; died, January 4, of heart disease.

Howard Homer Bell ✠ St. Louis, Mo.; University of Pennsylvania School of Medicine, Philadelphia, 1912; fellow of the American College of Physicians; formerly instructor in pathology, University of Alabama School of Medicine, Mobile, and instructor in laboratory diagnosis; at one time assistant in pathology, instructor in pathology, associate in bacteriology and associate professor of bacteriology, Washington University School of Medicine; served during the World War; aged 47; on the staff of St. John's Hospital, where he died, January 7, of internal hemorrhage, following an operation for gallstones.

Reginald R. Walker ✠ Washington, D. C.; Georgetown University School of Medicine, Washington, 1900; professor of clinical otolaryngology at his alma mater; member of the Medical Society of Virginia and fellow of the American College of Surgeons; served during the World War; consultant in otology, rhinology and laryngology, U. S. Veterans Bureau Diagnostic Clinic; surgeon to the Tuberculosis and Episcopal Eye, Ear, Nose and Throat hospitals; chief of service, department of otolaryngology, Children's Hospital; aged 54; died, January 15, of typhoid.

Carl Donald Chapell ✠ Flint, Mich.; Michigan College of Medicine and Surgery, Detroit, 1905; member of the Radiological Society of North America; past president of the Genesee County Medical Society; formerly county coroner; on the staffs of the Hurley Hospital, St. Joseph's Hospital and the Women's Hospital; aged 53; died, January 11, in the Graduate Hospital, Philadelphia, of carcinoma of the left antrum with metastasis to the cervical glands.

David Edward Hoag, New York; University of Maryland School of Medicine, Baltimore, 1896; member of the Medical Society of the State of New York; clinical professor of neurology, University and Bellevue Hospital Medical College and the New York Polyclinic Medical School and Hospital; served during the World War; on the staff of the Westside Hospital; aged 63; died, January 20, in the Norwegian Hospital, Brooklyn, of pneumonia.

Peter Henderson Bryce, Ottawa, Ont., Canada; University of Toronto Faculty of Medicine, 1880; L.R.C.S., L.R.C.P., Edinburgh, Scotland, 1880; past president of the American Public Health Association and formerly chief medical officer of the federal department of health and Indian affairs; aged 78; died, January 15, at sea, while on the way to the West Indies.

Roscoe C. Carnal, Orwell, N. Y.; University of Maryland School of Medicine, Baltimore, 1905; member of the Medical Society of the State of New York and the Medical Society of Virginia; aged 49; died, January 13, in the Crouse-Irving Hospital, Syracuse, of an injury received when he fell from a second floor window.

Aaron La Fayette Harlan ✠ Alexander City, Ala.; Medical College of Alabama, Mobile, 1886; past president of the Medical Association of the State of Alabama; member of the state board of censors of Alabama; state senator and member of the city council; aged 70; died, January 5, of heart disease.

John Hoadly Berry ✠ Athens, Ohio; University of Cincinnati College of Medicine, 1910; member of the American Psychiatric Association; past president of the Athens County Medical Society; superintendent of the Athens State Hospital; aged 48; died, January 18, in Gallipolis, following an operation for appendicitis.

Baxter Timothy Smelzer, Albany, N. Y.; Bellevue Hospital Medical College, New York, 1874; member of the Medical Society of the State of New York; formerly secretary of the state board of health and member of the state legislature; aged 79; died, January 17, of prostatic hypertrophy and myocarditis.

William Alexander Walters ✠ Los Angeles; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1906; member of the Pacific Coast

Oto-Ophthalmological Society; aged 51; died, Dec. 25, 1931, in St. Vincent's Hospital, of diffuse arteriosclerosis, chronic myocarditis, chronic interstitial nephritis and pulmonary embolism.

William Ellery Briggs ✠ Sacramento, Calif.; University of Wooster Medical Department, Cleveland, 1877; member of the American Academy of Ophthalmology and Oto-Laryngology, Pacific Coast Oto-Ophthalmological Society and Fellow of the American College of Surgeons; aged 78; died, Nov. 5, 1931, of cerebral hemorrhage.

John Wesley White, Wilkesboro, N. C.; Jefferson Medical College of Philadelphia, 1889; member of the Medical Society of the State of North Carolina; past president of the Wilkes County Medical Society; for ten years county health officer; aged 70; died, January 12, of chronic myocarditis.

John Charles Copeland, Los Angeles; Baltimore University School of Medicine, 1896; member of the Associated Anesthetists of the United States and Canada; served during the World War; aged 59; died, Dec. 31, 1931, in a hospital at San Diego, of chronic nephritis and chronic myocarditis.

Sumner C. Sackett, Fremont, Ohio; Cleveland College of Physicians and Surgeons, Medical Department Ohio Wesleyan University, 1896; member of the Ohio State Medical Association; formerly on the staff of the Community Hospital; aged 64; died, Dec. 25, 1931, of heart disease.

Preston E. Stem, Bethlehem, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1880; member of the Medical Society of the State of Pennsylvania; aged 75; formerly on the staff of St. Luke's Hospital, where he died, January 10, of bronchopneumonia.

James Edward Blaisdell, Chelsea, Mass.; Boston University School of Medicine, 1879; aged 77; on the staff of the Massachusetts Memorial Hospital, Boston, where he died, January 3, of abdominal carcinomatosis and bronchopneumonia.

Isaac E. Morris ✠ Fort Wayne, Ind.; Hahnemann Medical College and Hospital of Philadelphia, 1902; served during the World War; on the staff of the Fort Wayne Lutheran Hospital; aged 57; died, January 2, of carbolic acid poisoning.

Zilliba L. Kirkham, Little Rock, Ark.; University of Louisville (Ky.) School of Medicine, 1895; member of the Arkansas Medical Society; aged 64; died, Dec. 29, 1931, of hypertensive heart disease and chronic interstitial nephritis.

Louis Herman Van Engelken, Ocala, Fla.; Universität München Medizinische Fakultät, Munich, Bavaria, Germany, 1878; member of the Florida Medical Association; aged 78; died, January 7, of chronic bronchitis and myocarditis.

Joseph Wright Cook, Hamadan, Persia; University of Pennsylvania School of Medicine, Philadelphia, 1910; member of the California Medical Association; since 1929 a medical missionary; aged 48; died, January 7, of typhus fever.

William Eastman Fay, Melrose, Mass.; Harvard University Medical School, Boston, 1889; member of the Massachusetts Medical Society; aged 72; died, January 15, in Santa Monica, Calif., of progressive muscular atrophy.

William Clarence Brownson, Asheville, N. C.; Medical Department of the University of the City of New York, 1878; member of the Medical Society of the State of North Carolina; aged 75; died, January 12, of Parkinson's disease.

Charles Henry Crawford, Lawrence, Mass.; Bellevue Hospital Medical College, New York, 1882; member of the Massachusetts Medical Society; aged 77; died, January 13, of hypostatic pneumonia and prostatic obstruction.

William B. Graff, Avon Lake, Ohio; Cleveland College of Physicians and Surgeons, Medical Department Ohio Wesleyan University, 1896; aged 65; died, Nov. 27, 1931, of cerebral hemorrhage, arteriosclerosis and hypertension.

Herbert Clifton Powers ✠ Joplin, Mo.; Central Medical College of St. Joseph, 1903; past president of the Jasper County Medical Society; on the staff of St. John's Hospital; aged 51; died, Dec. 16, 1931, of angina pectoris.

Harris Ansel Canfield ✠ Bradford, Pa.; University of Michigan Medical School, Ann Arbor, 1877; aged 79; on the staff of the Bradford Hospital, where he died, Dec. 31, 1931, of carbuncle of the back of the neck.

James Douglas Dickson, Staten Island, N. Y.; Bellevue Hospital Medical College, New York, 1887; member of the Medical Society of the State of New York; aged 69; died, January 14, of cerebral hemorrhage.

Ignatz Kaufman, Newark, N. J.; Columbia University College of Physicians and Surgeons, New York, 1906; for many years on the staff of the Beth Israel Hospital; aged 65; died, January 12, of heart disease.

Horace Adams Reaves, Jacksonville, Fla.; University of the South Medical Department, Sewanee, Tenn., 1901; member of the Florida Medical Association; aged 58; died, January 4, of a self-inflicted bullet wound.

Anson T. Abell, Mattoon, Ill.; Hospital College of Medicine, Louisville, Ky., 1895; member of the Illinois State Medical Society; aged 73; died, January 9, of chronic interstitial nephritis and arteriosclerosis.

William Nelson Menefee, Crawfordsville, Ind.; Rush Medical College, Chicago, 1895; aged 63; died, January 12, in St. Elizabeth's Hospital, Lafayette, of carcinoma of the rectum and intestinal obstruction.

Frederick Edward Becker ✠ Denver; University of Colorado School of Medicine, Denver, 1925; assistant professor of pathology at his alma mater; aged 43; died, January 8, of influenza.

Frank Pierce Beck ✠ Oakland, Ill.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1903; aged 61; died, January 21, of cerebral arteriosclerosis.

Arthur A. Radcliffe, Waukegan, Ill.; St. Louis Medical College, 1879; aged 77; died, January 8, in the Victory Memorial Hospital, of injuries received when he was struck by a truck.

A. Victoria Scott Haensler, San Diego, Calif.; Woman's Medical College of Pennsylvania, Philadelphia, 1875; aged 89; died, Dec. 23, 1931, of aortic insufficiency and arteriosclerosis.

Robert W. Palmer, Gulf, N. C.; Louisville (Ky.) Medical College, 1890; member of the Medical Society of the State of North Carolina; aged 69; died, January 14, of heart disease.

E. Franc Morrill, Rock Island, Ill.; Woman's Medical College, Chicago, 1891; member of the Illinois State Medical Society; aged 65; died, January 26, of Addison's disease.

Savero Pacheco Silva, Arlington, Mass.; Tufts College Medical School, Boston, 1913; aged 40; was found dead in his garage, Dec. 8, 1931, of carbon monoxide poisoning.

Early C. Lucas, Ebenezer, Miss. (licensed, Mississippi, 1886); member of the Mississippi State Medical Association; aged 70; died, January 9, of arteriosclerosis.

Daniel L. Miller ✠ Goshen, Ind.; Medical College of Ohio, Cincinnati, 1881; on the staff of the Goshen Hospital; aged 77; died, January 10, of bronchopneumonia.

Barker Cushman Howland, New Bedford, Mass.; New York Homeopathic Medical College, 1873; aged 85; died, January 11, of heart disease and nephritis.

William McHenry Whitmore, Akron, Ohio; Hahnemann Medical College and Hospital, Chicago, 1880; aged 78; died, Dec. 1, 1931, of heart disease.

William Edward Gray ✠ Little Rock, Ark.; University of Arkansas School of Medicine, Little Rock, 1919; aged 54; died, January 10, of carcinoma.

Russell Lindsay Robertson, Lagos, Africa; University of Illinois College of Medicine, Chicago, 1927; aged 35; died, Oct. 31, 1931, of yellow fever.

Calmar C. Owen, Chicago Heights, Ill.; Chicago Homeopathic Medical College, 1890; aged 66; died, January 3, of chronic interstitial nephritis.

Helen C. Roberts, Great Falls, Mont.; Woman's Medical College, Chicago, 1887; aged 71; died, Dec. 2, 1931, in Mondovi, Wis., of angina pectoris.

Walter Proudfoot Thomson, Toronto, Ont., Canada; Victoria University Medical Department, Coburg, 1892; aged 63; died, January 8.

Edward H. Mathers, Baltimore; Starling Medical College, Columbus, Ohio, 1892; aged 65; died, January 1, of carcinoma of the larynx.

Pleasant Hunter Mitchell, Plainview, Texas; American Medical College, St. Louis, 1896; aged 59; died, Dec. 25, 1931, of pneumonia.

Henry C. Murphy, Brooklyn; Long Island College Hospital, Brooklyn, 1882; aged 69; died, January 6, of cerebral hemorrhage.

John W. Dawson, Columbus, Ohio; Eclectic Medical Institute, Cincinnati, 1888; aged 71; died, January 11, of cerebral hemorrhage.

Benjamin R. Walker, Ekron, Ky.; Kentucky School of Medicine, Louisville, 1882; aged 74; died, Dec. 12, 1931, of cardiac asthma.

William James Hood, Avon Park, Fla.; Starling Medical College, Columbus, 1874; aged 84; died, Dec. 2, 1931, of uremia.

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Correspondence

THE STANDARD ENCYCLOPEDIA CORPORATION OF CHICAGO

To the Editor:—I don't know to what department I should address this letter, but I hope it may be put to use, so that it will warn other physicians against the book-agents I am describing.

A suave gentleman introduced himself into my office as the representative of the Standard Encyclopedia Corporation of Chicago and saying that he had been sent at the request of Doctor Walker (Chief of Medical Service, Brockton City Hospital) and Dr. George Moore (Secretary of Plymouth County Medical Association). He said his company had authorized him to make a gift of some of their publications to any new doctor just starting in this district, and that Drs. Moore and Walker had advised him to select me. I attempted to get these doctors on the telephone, but they were out. I listened to the clever talker—I am sorry I did not have a dictograph to take his misrepresentations for use in court—and he claimed that he was not a salesman but an advertising agent who was presenting me with certain volumes of books, etc., on condition that after receiving and approving them, I would permit his company to use my name in a sales campaign in this district to be carried on by a crew of boys under his charge. I told him I did not need any more *medical* books. He kept adding new inducements, such as free subscription to a Research Consultation Service, and motion pictures at half price. I asked to see the books and he showed me a prospectus with articles on insulin and other medical subjects, and I understood that the volumes he offered were Standard Encyclopediae of Medicine—since, I have learned that they are not medical books at all.

Having just started to practice medicine, I needed some medical books and I thought these must be good if Drs. Moore and Walker recommended them, so I told the man he might send them on for approval. He then suggested that if I would pay $2.50 monthly until a total of $69.50 had been paid, I would be entitled to ten years' extension service, which would keep the books up to date. So saying, he presented an order blank for me to sign. I refused until he said it was not a contract but was necessary in order that the books be sent for approval. I asked him what this item on the blank meant: "It is agreed that this order, when accepted by the publisher, is unconditional, not subject to cancellation, and will not be affected by any agreement not endorsed hereon," and he replied that the company would give me a chance to approve the volumes before accepting my order and that if I did not accept their offer, "it would be his hard luck" and I need not keep the books.

Well, I am young at the business and not used to book agents and the offer seemed fair, so I signed in order to get rid of him, and gave him $5 as a provisional payment. That evening I got in touch with Dr. Moore and Dr. Walker, and they were surprised and angry and denied having sent him. Dr. Moore had literally kicked him out of his office the previous day. I immediately wrote the Chicago office of the publishers, telling them the particulars and asking them to pay no attention to the blank their agent would be sending them, and not to send me the books or use my name in their advertising campaign. To my surprise, they replied I had signed a legal contract for $2.50 a month for a total of $69.50 and the books were on the express.

I refused the express and wrote them I had signed no contract. Also, I refused to sign an enclosure which they sent and asked me to confirm and approve the original order. They have since sent me several letters reproaching me for "lack of good faith and professional honor," etc., and insist on my "obligation."

Three days ago, I received a letter from their attorney—John E. Roche, City State Bank Building, Chicago—whom they have instructed to take steps to enforce collection. He states the full amount of $69.50 (less $5) is due. I have never made any monthly payments. He gives me until February 4 in which to pay, otherwise he will take court action and force me to pay court costs and attorney fees, in addition. However, he offers to oblige me by accepting a partial payment now, provided I meet the remainder by making four equal monthly payments.

Of course, I am consulting a local attorney, when he returns Monday.

I suppose I was quite gullible to listen to the agent, and showed lack of business acumen in signing any paper at all. I thought the man "on the level."

I am going into the above detail in hope you will make use of it, so that other new members of the profession may be warned and that the methods of the Standard Encyclopedia Corporation of Chicago be investigated. Any advice that you may give would be appreciated—especially if of use before February 4.

HERBERT J. HULSE, M.D., Rockland, Mass.

[EDITORIAL NOTE.—Dr. Hulse's letter, describing his experience with the Standard Encyclopedia Corporation and their agents, came after last week's JOURNAL, that contained an article on this subject, was in the press.]

INFLAMMATION AS A DEFENSE MECHANISM

To the Editor:—In reference to the editorial in THE JOURNAL, January 9, on "Inflammation as a Defense Mechanism," in which you review my studies on the subject, may I call your attention to certain facts in regard to your comments in the last paragraph.

With Miriam F. Menkin (*J. Exper. Med.* **51**:285 [Feb.] 1930) I have shown that the accumulation of dye from the blood stream into an inflamed area is doubtless associated with increased capillary permeability, which is part of the acute inflammatory reaction. This was shown by measuring the rate of fall of concentration of trypan blue in the blood stream as it passes out into the inflamed and normal peritoneal cavity. The rate of fall of concentration of the dye in the blood stream is about twice as great in the capillaries of the inflamed area as in those of the normal area. This indicates that the accumulation of the dye from the blood stream into inflamed tissue is most likely associated with an increased permeability of capillaries. Furthermore, in a later study (*J. Exper. Med.* **53**:647 [May] 1931) I demonstrated that capillary permeability in inflammation is increased to the extent of allowing particulate matter to pass through the endothelial wall, a condition that is not seen in the capillaries of a corresponding normal tissue area.

In brief, the accumulation of foreign substances into an inflamed area from the circulating blood stream is explained mainly by the increased capillary permeability in the acute stage of inflammation, whereas the inability of these substances to escape from the inflamed area, i. e., their fixation in situ, is primarily the result of thrombosed lymphatics and of the presence of a network of fibrin at the site of inflammation, both of which cause mechanical obstruction to the normal lymphatic drainage of such substances from the tissue spaces.

For further reference, these points have been emphasized in a recent review "An Aspect of Inflammation in Relation to Immunity" (*Arch. Path.* **12**:802 [Nov.] 1931).

VALY MENKIN, M.D., Boston.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

AURICULAR FIBRILLATION AND USE OF DIGITALIS

To the Editor:—A white woman, aged 44, married, the mother of two children, has been apparently in good health with the exception of some slight shortness of breath on exertion. An accident occurred, consisting of falling down several steps, in consequence of which she sustained a shoulder dislocation and two fractured ribs. Simultaneously, auricular fibrillation occurred. Digitalization was immediately effected. Two weeks has already elapsed and the cardiac note has been persistently above 100, ranging from 100 to 110, despite massive doses of digitalis. Except for some slight cardiac enlargement there is no further pathologic change. There is a barely palpable mass in the right thyroid area, and I am making a diagnosis of toxic adenoma. Basal metabolism tests are not confirmative, several having been made. Chemical analysis of the blood and the Wassermann test both give negative results. What medication would you suggest to reduce the pulse? Digitalis, strangely, whether in small or in large doses, has absolutely no beneficial effect; if anything, the pulse becomes more rapid. From a medicolegal point of view, just what are the possibilities, assuming that there is insurance involved? Please omit name.

M.D., New York.

ANSWER.—Auricular fibrillation does occasionally have its onset consequent on some traumatism, as in this case. In such cases it is always probable that there was some preexisting cardiac lesion predisposing to the fibrillation. In this case the history of shortness of breath, and the fact that there is enlargement of the heart, indicate previous cardiac damage. It is a possibility also that the fibrillation was present before the accident, without anything more in the way of symptoms than the slight shortness of breath, and that it was first discovered at the examination after the accident.

It is unusual for auricular fibrillation not to yield to the administration of digitalis. It is possible that the digitalis was below standard strength. It is possible also that the optimal dosage had been passed and that the increase in rate with increased dosage is due to an overdosage. The effects of digitalis follow a fairly regular sequence; first, but not always in the normal rhythm, a decrease in rate; then a decrease in conductivity; an increase in irritability with occasional premature ventricular contractions; with a further increase in irritability a coupled pulse consisting of a normal beat followed closely by a premature ventricular contraction; with still further increase in irritability an increase in rate, which may give an irregular pulse but tends to be regular, and then ventricular fibrillation and death. The coupled pulse is a danger signal, and the increase in rate means that the patient has had a large part of the fatal dose, sometimes 85 or 90 per cent.

With a normal metabolic rate it is improbable that the adenoma of the thyroid is of any significance.

A pulse of 100 or 110 is not in itself an indication for digitalis administration. The volume of blood delivered by the heart per minute at that rate may be greater in some cases than at a slower rate.

Graphic records should be made to determine the condition, and the reasons for the digitalis effects. (A normal mechanism with frequent premature ventricular contractions could readily be mistaken for auricular fibrillation and given a similar picture.)

CAUSES OF DEATH OF YOUNG INFANT

To the Editor:—Please give your opinion of the cause of death in the following case: November 17, I attended a woman in a normal confinement. The infant was apparently healthy and well in every respect. I visited the mother two or three days after the birth of the child, and both seemed to be in good condition. November 24, about 10 p. m., I was called to see the baby, which the parents thought did not seem "just right." The child had a rectal temperature of 105; there were no symptoms of a cold; the lungs were clear and the bowels in good condition; no cyanosis or spasms were present. A slight nystagmus was noted. The infant nursed all right and took water but died in the early morning, November 25. Please omit name.

M.D., Ohio.

ANSWER.—It is difficult in the absence of more detailed clinical data and a necropsy to state the cause of death. The most frequent causes of fever in the first days of life are transitory fever (thirst fever), overstimulation of the heat center, overheating and infection.

Transitory fever occurs between the second and the sixth day and is usually associated with continuous loss of weight. Children who are nursed, as this child was, and who receive sufficient water, rarely present the transitory type of fever.

Intracranial hemorrhage may give rise to obscure fever by stimulation of the heat center. It is true that this child showed a slight nystagmus, though it is difficult to ascribe this single symptom to a cerebral cause, without other confirmatory observations.

The temperature of infants is sometimes influenced by the application of external heat. This is particularly true of premature infants who are placed in heated incubators.

The last possibility is that the child might have acquired an infection, and this sometimes occurs even when the most painstaking care is bestowed on the infant and the treatment of the navel. Umbilical infection may be present without any local evidence of inflammation. When the infection enters the blood stream, fever is one of the most striking symptoms, and localization in any case obviously may occur. One would be inclined to hazard the opinion that, owing to the rapid and fatal termination in this infant, either an infection or a cerebral hemorrhage was responsible.

POSSIBLE REACTION AFTER SCARLET FEVER IMMUNIZATION

To the Editor:—During an informal conversation with a group of physicians a few days ago, the subject of giving scarlet fever toxin for the active immunization of children was brought up, and Dr. G. C. Bullington of this city stated that he had heard of two severe reactions which occurred in two children when they received their last dose. I am giving this treatment to two children and was prepared to start it with my own child. Before going any further, I wish to ask whether you consider the hazard great, as I should be much distressed should anything happen to a child whom I was treating. I am using the Dick toxin that is marketed by E. R. Squibb & Sons.

LOUIS H. MILLER, M.D., Pana, Ill.

ANSWER.—Severe reactions following the fifth immunizing dose of scarlet fever toxin are rare. They have occurred in cases in which through mistake the fifth dose was injected first, without the preliminary immunization conferred by the injection of the first four graduated doses, but even in these cases they have not been fatal nor have they resulted in permanent injury. In the exceptional cases in which the patient is sensitive to broth, urticaria may develop within a few minutes after the injection of either scarlet fever toxin or diphtheria toxoid. This may be prevented by injection of 0.2 cc. of a 1:1,000 solution of epinephrine hydrochloride taken up in the same syringe with the immunizing dose, or the usual dose of epinephrine hydrochloride may be given when urticaria begins to appear. General reactions accompanied by some fever, nausea and rash are more apt to occur after the first, second or third doses than after the fifth.

SENSITIVITY TO SILK OR HOUSE DUST IN ASTHMA

To the Editor:—A white man, aged 28, a silk knitter, has been troubled with asthma for the past five years. The attacks are stubborn, often lasting a week or more and reacting poorly to hypodermic injections of epinephrine. They were first ushered in by attacks of migraine, with vomiting of bile, following which the bronchial spasm would develop. After biliary drainage and administration of autogenous vaccine prepared from the recovered bile, the attacks of migraine have ceased, but the asthma still continues. The patient has been completely tested for sensitivity to pollens, epidermals, foods, and bacterial and incidental proteins, the only positive result being a strong reaction to house dust. I have been unable to give him larger doses than 5 mm. of the solution prepared from dust from his home without instituting a severe reaction. The blood calcium was established and found to be 15 mg. per hundred cubic centimeters of blood. Examination of the nose and throat gave negative results. A tonsillectomy was done after scarlet fever six years ago. Following the suggestion of Rackemann, I had prepared an autogenous vaccine from the material coughed up from the lungs during the breaking up of an attack. This has the same effect as the dust vaccine. Feeling that the size of the dose of vaccine had perhaps been increased too rapidly, I started anew, attempting to repeat the dose until there was no longer any reaction. This too has failed, because the patient repeatedly reacts to the same dose, even to 0.025 cc. of dust extract, and to 2½ million bacteria in the autogenous vaccine. What suggestions have you to offer as to the further treatment of this case? Would you suggest calcium therapy, even though the blood calcium is high? In regard to calcium therapy, I have been led to believe that in cases of asthma and hay fever one may expect a lowered blood calcium. In another patient I found a blood calcium of 26.5 mg. per hundred cubic centimeters without any previous calcium therapy. This patient also had asthma. I am unable to find anything in my books along these lines. Are the cases mentioned instances of disturbed calcium metabolism? What is to be done in such cases? Please omit name and address.

M.D., Pennsylvania.

ANSWER.—The occupation of silk knitter suggests the possibility of silk as an exciting factor. Has this been investigated thoroughly? Is the patient better when away from his work? Are skin tests, cutaneous and intracutaneous, negative for silk? If these are negative, a contact or patch test should be tried. Some of the silk handled by the patient should be moistened with water and applied on a piece of gauze 1 inch square to a

part of the back that has been cleansed with soap and water. The gauze should be covered with oiled silk, held by adhesive plaster and examined after twenty-four, forty-eight and seventy-two hours. A local dermatitis indicates a positive reaction.

If the silk can be excluded, further injections of house dust extract should be given. However, intracutaneous tests of 0.02 cc. each should be tried before the treatment is started; dilutions of 1:10, 1:100, 1:1,000 or even greater dilutions should be used, together with the undiluted extract; the dilution that just fails to give a reaction should be the one to be used; this will rarely cause any symptoms. These tests should be controlled by a test with physiologic solution of sodium chloride. The dose is gradually increased up to 1 cc.; the next higher dilutions are then used, in order, until, finally, undiluted extract can be given; it is an unusual individual who cannot eventually tolerate 1 cc. The blood calcium in asthma is probably not important. The earlier work showing low blood calcium has been disproved. Furthermore, giving calcium to asthma patients is rarely helpful.

TREATMENT OF COMPLICATED DIABETES

To the Editor:—I have under my care a woman, aged 65, suffering from diabetes complicated by a moderate arteriosclerosis and hypertension (150/90). She receives 20 units of U 40 daily. The urine is negative for sugar but shows many finely and coarsely granular casts with heavy traces of albumin. Chemical analysis of the blood gives negative results except for sugar, which is 285. The patient has a cataract of the left eye, completely obscuring her vision, and changes in the right retina due to the aforementioned conditions. She complains of dizziness as soon as she lies down, besides a constant noise in her head. 1. Is this dizziness due to the hyperglycemia, or is it in any way associated with the ocular condition? 2. Is there much risk in operating on a cataract in this case, the patient having had the diabetic conditions for five years and having been on insulin all this time? 3. Has it yet been determined whether this high blood sugar has any particular significance when the urine is negative for sugar? 4. What medication, if any, is indicated besides sedatives for the dizziness? 5. Is there any preparation that may be given orally that seems to benefit diabetes? If so, can it be given to replace insulin or used in conjunction with insulin? Please omit name.

M.D., New Jersey.

ANSWER.—1. It is doubtful whether hyperglycemia in itself produces dizziness. It must be recalled that this patient has arteriosclerosis, hypertension and signs of renal disease. The dizziness may be due to cerebral arteriosclerosis, or the ocular condition may have something to do with it. However, the fact that the dizziness bears a relation to position suggests an arterial basis.

2. A cataract operation should be practically without risk in this patient.

3. There is considerable doubt today as to the significance of such a blood sugar in an older patient with evidences of arterial and renal disease. Some authorities find a constantly high blood sugar in these old patients and do not pay a great deal of attention to it, as they consider that it may be due to a rise in the renal threshold. For this reason, and also because it has been shown that insulin is not entirely free from the danger of producing heart damage in such patients, some of the more recent investigators urge considerable caution in the effort to reduce hyperglycemia.

4. Potassium iodide, either alone or in combination with bromides, may be of considerable value.

5. No preparations given orally are of proved value in the treatment of diabetes. Synthalin, which has been given the most extensive trial, does seem to be beneficial in an occasional case, but Synthalin is far from being nontoxic and in some patients it produces liver damage. It seems best at present to use insulin and nothing else.

IRIDECTOMY IN CATARACT EXTRACTION

To the Editor:—A man, aged 60, in good physical condition except for early manifestations of paralysis agitans, contemplates surgical removal of senile cataract, unilateral. The patient's tonsils and teeth have been removed, and no focal infections are apparent. Is it advisable to have the iridectomy performed some time before the cataract is removed? If so, why, and what period usually is permitted to intervene between the operations? What is the prognosis so far as vision is concerned following the removal of the cataract, and what length of time is usually required after the operation before glasses may be fitted? Please omit name.

M.D., Ohio.

ANSWER.—The pros and cons in the question of preliminary iridectomy before cataract extraction cannot be discussed in the short space allotted to answers, and in a question of this type it is far better to rely implicitly on the operator and his experience in this matter. The more modern ophthalmologists no longer perform complete iridectomy in cataract extraction, thus eliminating the question entirely. When it is deemed advisable, the preliminary iridectomy usually precedes the cataract extraction by from four to eight weeks. Restoration of useful vision by cataract extraction is attained in about 96 per cent of the cases, provided the macular retina is somewhere near normal. Glasses are usually prescribed about six weeks after operation.

STERILITY DUE TO OBLITERATION OF DUCTS

To the Editor:—Kindly give possible effective treatment for male sterility due to obliteration of the ducts from old gonococcic infection. Please omit name.

M.D., Ohio.

ANSWER.—In the treatment of sterility due to an old gonorrheal infection, it is essential to diagnose ahead of time whether the absence of spermatozoa in the semen is due to the fact that the testicles no longer manufacture spermatozoa or whether it is due to an occlusion of both vasa which would prevent spermatozoa from entering the urethra because of occlusion of both vasa.

The diagnosis is made by inserting a rather large hypodermic needle into the testicle, aspirating some of the testicular fluid, and examining this fluid at once for spermatozoa. If these are found, the azoospermia is due to obstruction in the vas. In this case the only treatment that can possibly afford any relief is the operation of epididymovasostomy; namely, anastomosing the unoccluded part of the vas with another portion of the epididymis. Perhaps the best operation at present is that devised by Hagner (*Journal of Urology*, March, 1925, p. 377). The patient must, however, be definitely informed that, while without such operation there is absolutely no hope, the operation itself is only at times successful, though no harm can be done even if it does not succeed. Indeed, it may be repeated if unsuccessful the first time.

In case no spermatozoa are found in the aspirated testicular fluid, the operation is not indicated. One may administer extract of the anterior lobe of the pituitary gland, which at times brings back the spermatogenic function of the testicle. Later, condom specimens are examined and, if necessary, the testicle is again aspirated; if spermatozoa are found in the aspirated testicular fluid, the operation may be tried with some hopes of success. Of course, if spermatozoa are found in the condom specimen, nothing further need be done, as the diagnosis is established that the original azoospermia was not due to occlusion of the tubes but to deficient testicular action.

GRAVITY EDEMA WITH USE OF INSULIN

To the Editor:—What is the etiology of and treatment for a gravity edema that is apparently due to the use of insulin in a case of diabetes mellitus? Please omit name.

M.D., Pennsylvania.

ANSWER.—Joslin is authority for the statement that "Remarkable changes in the weight of normal individuals will . . . occur if the proportion of fat to carbohydrate is altered, although the caloric value of the diet remains constant." One gram of carbohydrate stored in the body demands the retention of 3 Gm. of water, while 1 Gm. of fat requires only 0.1 Gm. of water; therefore any condition which would improve carbohydrate storage simultaneously implies water storage. Insulin acts similarly by promoting storage of glycogen in liver and muscles, and this condition also means water retention. The effects of sodium chloride or sodium bicarbonate on edema and weight are well known, especially in diabetic persons.

Since marked edema explained on the basis of what has just been said has been known to occur in diabetic patients even before the use of insulin, it is probably true that the edema following insulin is due to improved carbohydrate utilization and storage. Regarding treatment, the sodium chloride intake should be analyzed to ascertain that the patient is not taking too much, and if alkaline therapy is being administered it should be stopped. Sometimes the edema can be made to disappear by starting with small doses and gradually increasing the insulin.

Further information may be obtained in an article by I. M. Rabinowitch (*Canad. M. A. J.* **17**:685 [June] 1927).

REACTIONS WITH DIPHTHERIA TOXOID

To the Editor:—One cubic centimeter of diphtheria toxoid (Lederle) produced a moderately severe reaction; i. e., soreness and edema of the entire upper arm. This persisted for four days. What results should be expected from a second similar injection, to be given one month following the first? Is there any method of modifying this type of reaction? Please omit name.

M.D., New York.

ANSWER.—A second injection one month after the first may cause a similar reaction. Such reactions may usually be avoided by injecting 0.1, 0.25, 0.5, 1, and 1 cc. of diphtheria toxoid at intervals of one week instead of from three to four weeks.

Council on Medical Education and Hospitals

COMING EXAMINATIONS

ALASKA: Juneau, March 1. Sec., Dr. Harry C. DeVighne, Juneau.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: Written examinations will be held in nineteen cities of the United States and Canada, March 26. The general, oral and clinical examination will be held in New Orleans, May 10. Sec., Dr. Paul Titus, 1015 Highland Building, Pittsburgh.

CALIFORNIA: *Reciprocity.* Los Angeles and San Francisco, March 16. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

CONNECTICUT: *Homeopathic.* New Haven, March 8. Sec., Dr. Edwin C. M. Hall, 82 Grand Avenue, New Haven. *Regular.* Hartford, March 8-9. *Endorsement.* March 22. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden.

MAINE: Portland, March 8-9. Sec., Dr. Adam P. Leighton, Jr., 192 State St., Portland.

MASSACHUSETTS: Boston, March 8-10. Sec., Dr. Stephen Rushmore, 144 State House, Boston.

NATIONAL BOARD OF MEDICAL EXAMINERS: Examinations will be held in cities where there are five or more candidates, Feb. 24-26. Ex. Sec., Mr. Everett S. Elwood, 225 South Fifteenth St., Philadelphia.

NEW HAMPSHIRE: Concord, March 10-11. Sec., Dr. Charles Duncan, Concord.

OKLAHOMA: Oklahoma City, March 8-9. Sec., Dr. J. M. Byrum, Shawnee.

PORTO RICO: San Juan, March 1. Sec., Dr. A. Ortiz Romeu, Diaz Garcia Clinic, San Juan.

WEST VIRGINIA: Charleston, March 22. Sec., Dr. W. T. Henshaw, Charleston.

Arkansas May Examination

Dr. Samuel J. Allbright, secretary, State Medical Board of the Arkansas Medical Society, reports the written examination held at Little Rock, May 12-13, 1931. The examination covered 12 subjects and included 120 questions. An average of 75 per cent was required to pass. Twenty-seven candidates were examined, all of whom passed. The following college was represented:

College	PASSED	Year Grad.	Per Cent
University of Arkansas School of Medicine		(1931)	80, 80.4, 80.6, 80.8, 81.1, 81.4, 82.3, 82.4, 82.7, 83, 83.2, 83.8, 83.9, 83.9, 83.9, 84.4, 85, 85.2, 85.3, 85.4, 85.5, 85.7, 86.3, 86.8, 87.8, 88.3, 89.3

Kentucky Reciprocity Report

Dr. A. T. McCormack, secretary, Kentucky State Board of Health, reports 13 physicians licensed by reciprocity with other states and one physician licensed by endorsement of credentials from Aug. 10 to Dec. 28, 1931. The following colleges were represented:

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Arkansas School of Medicine		(1931)	Arkansas
Indiana University School of Medicine		(1927)	Indiana
University of Louisville School of Medicine		(1929)	California
University of Maryland School of Medicine and College of Physicians and Surgeons		(1930)	Maryland
Harvard University Medical School		(1923)	California
Eclectic Medical College, Cincinnati		(1928)	Ohio
Ohio State University College of Medicine		(1928)	Ohio
University of Cincinnati Coll of Med.		(1929), (1930), (1931)	Ohio
Meharry Medical College		(1930)	Tennessee
University of Tennessee College of Med.		(1929), (1931)	Tennessee

College	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Washington University School of Medicine		(1930)	N. B. M. Ex.

Alabama Reciprocity Report

Dr. J. N. Baker, secretary, Alabama State Board of Medical Examiners, reports 5 physicians licensed by reciprocity with other states and one physician licensed by endorsement of credentials from Sept. 10 to Dec. 15, 1931. The following colleges were represented:

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Emory University School of Medicine		(1930)	Georgia
Graduate School of Medicine of the Division of Biological Sciences, University of Chicago		(1930)	Illinois
Tulane University of Louisiana School of Medicine		(1930)	Louisiana
Washington University School of Medicine		(1926)	Ohio
University of Virginia Department of Medicine		(1926)	Virginia

College	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Johns Hopkins University School of Medicine		(1928)	N. B. M. Ex.

Medical Economics

THE PHYSICIAN'S INCOME TAX—1932

The taxpayer who is required to make a return must do so on or before March 15, unless an extension of time for filing the return has been granted. For cause shown, the collector of internal revenue for the district in which the taxpayer files his return may grant such an extension, on application filed with him by the taxpayer. This application must contain a full recital of the causes for the delay. Failure to make a return may subject the taxpayer to a penalty of 25 per cent of the amount of the tax due.

The normal rate of tax on individual citizens or residents of the United States, under the Revenue Act of 1928, is 1.5 per cent on the first $4,000 of net income in excess of the exemptions and credits, 3 per cent on the next $4,000, and 5 per cent on the remainder.

WHO MUST FILE RETURNS

1. Returns must be filed by every person having a *gross* income of $5,000 or more, regardless of the amount of his net income or his marital status. If the aggregate gross income of husband and wife, living together, was $5,000 or more, they must file a joint return or separate returns, regardless of the amounts of their joint or individual net incomes.

2. If *gross* income was less than $5,000, returns must be filed (*a*) by every unmarried person, and by every person married but not living with husband or wife, whose *net* income was $1,500 or more, and (*b*) by every married person, living with husband or wife, whose *net* income was $3,500 or more. If the aggregate net income of husband and wife, living together, was $3,500 or more, each may make a return or both unite in a joint return.

If the marital status of a taxpayer changed during the tax year, the amount of income necessary to bring him within the class required to make returns should be ascertained by inquiry of the local collector of internal revenue.

As a matter of courtesy only, blanks for returns are sent to taxpayers by the collectors of internal revenue, without request. Failure to receive a blank does not excuse any one from making a return; the taxpayer should obtain one from the local collector of internal revenue.

The following discussion covers matters relating specifically to the physician. Full information concerning questions of general interest may be obtained from the official return blank or from the collectors of internal revenue.

GROSS AND NET INCOMES: WHAT THEY ARE

Gross Income.—A physician's gross income is the total amount of money received by him during the year from professional work, regardless of the time when the services were rendered for which the money was paid, plus such money as he has received as profits from investments and speculation, and as compensation and profits from other sources.

Net Income.—Certain professional expenses and the expenses of carrying on any enterprise in which the physician may be engaged for gain may be subtracted as "deductions" from the gross income, to determine the net income on which the tax is to be paid. An "exemption" is allowed, the amount depending on the taxpayer's marital status during the tax year, as stated before. These matters are fully covered in the instructions on the tax return blanks.

Earned Income.—In view of the credit of 25 per cent allowed on *earned* net income, the physician should state accurately the amount of such income as distinguished from his receipts from other sources. *Earned* income means professional fees, salaries and wages received as compensation for personal services rendered. From this, in the computation of the tax, must be

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subtracted certain "earned income deductions." The difference is the "earned net income."

A physician may include as "earned" income money paid by patients who were looked after in part by his assistants. In order to do so, however, the patients on whose account the money was paid must have been in fact the patients of the physician-taxpayer and have looked to him as responsible for the services performed. Moreover, the services must have been performed under the physician-taxpayer's supervision.

The first $5,000 of an individual's net income from all sources may be claimed, without proof, to be *earned* net income, whether it was or was not in fact *earned* within the meaning set forth in the preceding paragraph. Net income in excess of $5,000 may be claimed as *earned* if it in fact comes within that category. However, a taxpayer may not claim, as *earned*, net income in excess of $30,000.

The conditions relating to the computation of the tax on earned income are too elaborate to be stated here. In case of doubt, physicians should consult collectors of internal revenue.

DEDUCTIONS FOR PROFESSIONAL EXPENSES

A physician is entitled to deduct all current expenses necessary in carrying on his practice. The following statement shows what such deductible expenses are and how they are to be computed:

Office Rent.—Office rent is deductible. If a physician rents an office for professional purposes alone, the entire rent may be deducted. If he rents a building or apartment for use as a residence as well as for office purposes, he may deduct a part of the rental fairly proportionate to the amount of space used for professional purposes. If the physician occasionally sees a patient in his dwelling house or apartment, he may not, however, deduct any part of the rent of such house or apartment as professional expense; to entitle him to such a deduction he must have an office there, with regular office hours. If a physician owns the building in which his office is located, he cannot charge himself with "rent" and deduct the amount so charged.

Office Maintenance.—Expenditures for office maintenance, as for heating, lighting, telephone service and the services of attendants, are deductible.

Supplies.—Payments for supplies for professional use are deductible. Supplies may be fairly described as articles consumed in the using; for instance, dressings, clinical thermometers, drugs and chemicals. Professional journals may be classified as supplies, and the subscription price deducted. Amounts currently expended for books, furniture and professional instruments and equipment, "the useful life of which is short," may be deducted; but if such articles have a more or less permanent value, their purchase price is a capital expenditure and is not deductible.

Equipment.—Equipment comprises property of more or less permanent value. It may ultimately be used up, deteriorate or become obsolete, but it is not in the ordinary sense of the word "consumed in the using"; rather, it wears out.

Payments for equipment or nonexpendable property for professional use cannot be deducted. As property of this class may be named automobiles, office furniture, medical, surgical and laboratory equipment of permanent value, and instruments and appliances constituting a part of the physician's professional outfit and to be used over a considerable period of time. Books of more or less permanent value are regarded as equipment, and the purchase price is therefore not deductible.

Although payments for equipment or nonexpendable articles cannot be deducted, yet from year to year there may be charged off against them reasonable amounts as depreciation. The amounts so charged off should be sufficient only to cover the lessened value of such property through obsolescence, ordinary wear and tear, or accidental injury. If improvement to offset obsolescence and wear and tear or injury has been made, and deduction for the cost claimed elsewhere in the return, claim should not be made for depreciation.

A hard and fast rule cannot be laid down as to the amount deductible each year as depreciation. Everything depends on the nature and extent of the property and on the use to which it is put. Five per cent a year has been suggested as a fair amount for depreciation on an ordinary medical library. Depreciation on an automobile would obviously be much greater. The proper allowance for depreciation of any property is that amount which should be set aside for the tax year in accordance with a reasonably consistent plan, not necessarily at a uniform rate, whereby the aggregate of the amounts so set aside, plus the salvage value, will at the end of the useful life of the property in the business equal the purchase price of the property or, if purchased before March, 1913, its estimated value as of that date or its original cost, whichever may be the greater. The physician must in good faith use his best judgment and make such allowance for depreciation as the facts justify. Physicians who, from year to year, claim deductions for depreciation on nonexpendable property will do well to make annual inventories, as of January 1, each year.

Medical Dues.—Dues paid to societies of a strictly professional character are deductible. Dues paid to social organizations, even though their membership is limited to physicians, are personal expenses and not deductible.

Postgraduate Study.—The Commissioner of Internal Revenue holds that the expense of postgraduate study is not deductible.

Traveling Expenses.—Traveling expenses, including amounts paid for transportation, meals and lodging, necessarily incurred in professional visits to patients and in attending medical meetings for a professional purpose, are deductible.

AUTOMOBILES

Payment for an automobile is a payment for permanent equipment, and is not deductible. The cost of operation and repair, and loss through depreciation, are deductible. The cost of operation and repair includes the cost of gasoline, oil, tires, insurance, repairs, garage rental (when the garage is not owned by the physician), chauffeurs' wages, etc.

Deductible loss through depreciation is the actual diminution in value resulting from obsolescence and use, and from accidental injury against which the physician is not insured. If depreciation is computed on the basis of the average loss during a series of years, the series must extend over the entire estimated life of the car, not merely over the period in which the car is in the possession of the present taxpayer.

If the automobile is used for professional and also for personal purposes—as when used by the physician for recreation, or used by his family—only so much of the expense as arises out of the use for professional purposes may be deducted. A physician doing an exclusive office practice and using his car merely to go to and from his office cannot deduct depreciation or operating expenses; he is regarded as using his car for his personal convenience and not as a means of gaining a livelihood.

What has been said with respect to automobiles applies with equal force to horses and vehicles and the equipment incident to their use.

MISCELLANEOUS

Laboratory Expenses.—The deductibility of the expenses of establishing and maintaining laboratories is determined by the same principles that determine the deductibility of other corresponding professional expenses. Laboratory rental and the expenses of laboratory equipment and supplies and of laboratory assistants are deductible when under corresponding circumstances they would be deductible if they related to a physician's office.

Losses by Fire, etc.—Loss of and damage to a physician's equipment by fire, theft or other cause, not compensated by

insurance or otherwise recoverable, may be computed as a business expense, and is deductible, provided evidence of such loss or damage can be produced. Such loss or damage is deductible, however, only to the extent to which it has not been made good by repair and the cost of repair claimed as a deduction.

Insurance Premiums.—Premiums paid for insurance against professional losses are deductible. This includes insurance against damages for alleged malpractice, against liability for injuries by a physician's automobile while in use for professional purposes, and against loss from theft of professional equipment, and damage to or loss of professional equipment by fire or otherwise. Under professional equipment is to be included any automobile belonging to the physician and used for strictly professional purposes.

Expense in Defending Malpractice Suits.—Expenses incurred in the defense of a suit for malpractice are deductible as business expense. Expenses incurred in the defense of a criminal action, however, are not deductible.

Sale of Spectacles.—Oculists who furnish spectacles, etc., may charge as income money received from such sales and deduct as an expense the cost of the article sold. Entries on the physician's account books should in such cases show charges for services separate and apart from charges for spectacles, etc.

Book Notices

Simple Lessons in Human Anatomy. By B. C. H. Harvey, M.D., Professor of Anatomy, University of Chicago. Cloth. Price, $2. Pp. 434, with 234 illustrations. Chicago: American Medical Association, 1931.

The most lamentable ignorance exists not only among the general public but even among otherwise intelligent laymen concerning the structure and functions of the human body. This is the result of an educational system in which high school students learn much concerning the structure of crayfish and earthworms but next to nothing reliable about their own bodies. As a result, the most impossible theories, the wildest affirmations paraded as "facts," and all the fallacious but well contrived crudities of quackery are accepted without reservation as true by otherwise astute men and women. Any attempt to dispel the fog of mysticism and transcendentalism that, for the layman, enshrouds the human body is most commendable. Dr. Harvey's book is a remarkably successful attempt to bridge this Grand Canyon of ignorance. It is a popular presentation of a highly technical subject. In it anatomy is removed from its unpleasant associations with the dissecting room and its odors and gruesomeness and is made to live and to have "attractiveness for the average man." In the first seven chapters the structure and functions of the various tissues are presented. Then follow eleven chapters dealing with the different systems of the body. The last two chapters are entitled "Pharmacies within the Body" and "Life History of the Body." The presentation throughout is clear, and sufficiently simple and nontechnical to be readily understood by a reader of average intelligence. Apt analogies and literary and historical allusions will stimulate interest and aid understanding. "The Human Factory," a chart presented by special arrangement with Frankh'sche Verlagshandlung of Stuttgart and presenting "pictorially a very mechanical and simple idea of some of the important engines of the human body" is in keeping with the spirit of this machine age. The illustrations are well selected and add much to the usefulness of the text. The only significant criticism to be offered is that the organs pictured in some of the illustrations are burdened with their Latin or Greek names when their English equivalents might have been used. For example, in the illustration on page 198 appear the words "Hepar" and "Ventriculus." This volume should certainly be available for collateral reading and might well be used as a textbook in high schools and normal colleges. It can be safely recommended by physicians to their patients and will be a useful addition to the literature on the tables in their waiting rooms.

Handbuch der biologischen Arbeitsmethoden. Herausgegeben von Geh. Med.-Rat Prof. Dr. Emil Abderhalden, Direktor des Physiologischen Institutes der Universität Halle a. d. Saale. Abt. V: Methoden zum Studium der Funktionen der einzelnen Organe des tierischen Organismus, Teil 8, Heft 5: Funktionen des Kreislauf- und Atmungsapparates (Ergänzung zu Abt. V, Teil 4). Lieferung 359. Tonoszillographische Blutdruckmessung und die Deutung der Blutdruckkurve. Von Johann Plesch. Paper. Price, 4.20 marks. Pp. 773-844, with 37 illustrations. Vienna: Urban & Schwarzenberg, 1931.

The author describes an instrument for recording the blood pressure, the instrument, including the recording device, being housed in an air-tight metal box. The cuff contains a thin metal layer in the outer wall so as to direct all pressure inward, toward the artery. This cuff is equipped with a metal catch, so that it fits an arm of any size snugly. The "tonoszillogram," or record, that is made depends on two components: (1) the blood pressure proper, depending on the heart's contraction, and (2) the elasticity of the artery wall. Interpretation of the recorded curve was worked out by means of experiments with rubber tubes and tubes of gold beaters' leaf. The didatic notch and Kratham's sounds are discussed. Four phases of the record are described: 1. The compression phase, in which the outer pressure is greater than the maximum pressure plus the "compression pressure," so that the artery is flat. This phase may show oscillations caused by impacts of the pulse on the cuff. 2. The phase during which the outer pressure is less than the maximum pressure plus the "compression pressure" but greater than the maximum pressure. The end of this phase is the maximum pressure. 3. The third phase, during which the outer pressure is greater than the minimum pressure but less than the minimum pressure plus the "compression pressure." This phase ends with the minimum pressure. 4. The phase during which the outer pressure is less than the minimum pressure. For reading the record, the following characteristics are noted: 1. The "total minimum pressure" is that point at which the intervals between the individual oscillations cease and where the base points begin to appear. 2. The "total maximum pressure" is at the point where the first upstrokes of the pen appear. 3. The minimum pressure is at the point at which the inertia swing of the pen disappears and the artery acts less like an elastic tube. 4. The maximum pressure is the most difficult to read. The author found, by checking with auscultation, that the distance between total minimum and minimum pressure on the record is equal to that between the total maximum and maximum pressure.

Conquering Arthritis. By H. M. Margolis, M.D. Cloth. Price, $2. Pp. 192, with illustrations. New York. Macmillan Company, 1931.

Arthritis is by no means conquered. Scientific medicine has learned something about the nature of various forms of arthritis and, through trial and error or methods based on some knowledge of causation it has learned to help considerable numbers of those who suffer with rheumatic disease. The book is divided into chapters which trace the history and the classification of arthritis, give the cycles of the disease, state the distinction between the various forms, and describe the treatment. It becomes obvious at once to the reader that no one form of treatment is applicable to all cases but that the skilful physician will combine rest, exercise, diet, drugs, biologic methods, physical methods, surgical and orthopedic treatment and changes of climate in working out a formula that will be successful for the specific patient. The book is written in a form that can be followed by any intelligent reader.

Handbuch der normalen und pathologischen Physiologie mit Berücksichtigung der experimentellen Pharmakologie. Herausgegeben von A. Bethe, G. v. Bergmann, G. Embden und A. Ellinger. Band XVI, 2, Hälfte: Correlationen II/2: Correlationen des Zirkulationssystems, Mineralstoffwechsel, Regulation des organischen Stoffwechsels, die correlativen Funktionen des autonomen Nervensystems II. Bearbeitet von L. Asher, H. Eppinger, A. Fleisch, usw. Paper. Price, 78 marks. Pp. 1163-1860, with 73 illustrations. Berlin: Julius Springer, 1931.

In the present book (which completes volume XVI) are such sections as reflexes from the skin and various interoceptors on the heart and blood vessels, the effect of temperature on the circulatory system, hormonal influences on the circulatory system, effects of psychic processes on respiration, pulse rate, blood pressure and distribution of blood, the pathology of normal circulatory correlations, mineral content of and mineral metabolism in the body, regulation of organic metabolism by means

of the nervous system and hormones, and the general physiology of the correlations occurring through the autonomic nervous system. Since the preceding half of the volume contains a section on the functional pathology of the vegetative nervous system and the correlations in the body effected by the endocrine glands, a long felt want for complete bibliographic reference to the physiology of the sympathetic and parasympathetic nervous system is now available. For just this type of reference handbook, clinicians (and psychologists) have been looking for some time. Since derangements in the autonomic system often express themselves in the form of sensory disturbances, clinicians are considerably more "conscious" of this important field than are laboratory workers.

Urological Roentgenology: A Roentgen Atlas of the Genito-urinary Tract with Case Histories and an Outline of Urology in Its Relations to Roentgenology. By Hugh H. Young, M.D., Clinical Professor of Urology, Johns Hopkins University, and Charles A. Waters, M.D., Associate in Clinical Roentgenology, Johns Hopkins University. Volume VII of Annals of Roentgenology. A Series of Monographic Atlases. Edited by James T. Case, M.D., Professor of Roentgenology, Northwestern University Medical College, Chicago. Second edition. Cloth. Price, $20. Pp. 564, with 592 illustrations. New York: Paul B. Hoeber, Inc., 1931.

Any one who criticized the first edition of this splended work could hardly fail to use superlatives. The second edition is amplified to include chapters on intravenous urography and anteriography. Chapter XI is devoted to intravenous urography and briefly takes up the history of the various compounds used in attempts to produce a usable, safe preparation for intravenous administration, these efforts culminating in the synthesis of what is known in Europe as uroselectan and in the United States as iopax. The authors give credit for this preparation to Binz and Raeth, Swick of New York and von Lichtenberg, in whose clinic the first satisfactory results were obtained. Excellent halftones illustrate this chapter. A conservative, accurate evaluation of the method is given. Chapter XII, on arteriography of the aorta and its abdominal branches in urologic surgery, contains quotations from the work of dos Santos, Lamas and Caldas and reproductions of eight of their films. Young and Waters "hesitate to express an opinion at this time on the startling work by dos Santos and his confrères." They have punctured the aorta in 150 cases without untoward results. This volume will serve as an excellent reference work to both the urologist and the roentgenologist.

Nutritional Anaemia in Infancy with Special Reference to Iron Deficiency. By Helen M. M. Mackay. Assisted by Lorel Goodfellow. With a statistical appendix by A. Bradford Hill. Medical Research Council, Special Report Series, No. 157. Paper. Price, 2s. Pp. 125. London: His Majesty's Stationery Office, 1931.

Secondary anemia is one of the most common disorders found in all types of environments and in all classes of people. It seems also that secondary anemia due to nutritional deficiencies is quite common as well. Anemia in infants brings an increased susceptibility to infections and for this reason must be combated early. This report is based on investigations lasting over five years on 1,100 infants. The studies seem to indicate that nutritional anemia is a clinical entity, and its etiology and prevention are considered. For prevention and cure, it is suggested that a child be given iron and ammonium citrate. It seems possible, however, that this preparation might better be saved for treatment and that foods high in iron content be given in the infant's diet as early as possible, as a preventive measure. The attention drawn toward the subject of anemia by this investigation will aid in promoting efforts for eliminating this disorder in infancy.

The Ingenious Dr. Franklin: Selected Scientific Letters of Benjamin Franklin. Edited by Nathan G. Goodman. Cloth. Price, $3. Pp. 244, with 11 illustrations. Philadelphia: University of Pennsylvania Press, 1931.

This volume contains selected letters of Benjamin Franklin on a variety of subjects, many of them of medical interest. He wrote "Rules of Health and Long Life," an essay on choosing eye glasses, several essays on swimming, one on the treatment of gout, and a discussion of the causes of colds and their nature. These, together with many others on purely electrical and physical subjects, are included in the present book, which is beautifully printed and full of interest, not only for the Franklinophile but also for every intelligent reader.

Kochbuch für Tuberkulöse. Von Frau Mimicia Herrmannsdorfer und Prof. Dr. med. et phil. Adolf Herrmannsdorfer. Mit einem Geleitwort von F. Sauerbruch. Fourth edition of „Praktische Anleitung zur kochsalzfreien Ernährung Tuberkulöser." Cloth. Price, 6.75 marks. Pp. 153. Leipzig: Johann Ambrosius Barth, 1931.

This contains recipes for the salt-free treatment of tuberculosis of the lungs and, where possible, of other parts of the body. There is a foreword by Professor Sauerbruch, who warmly recommends the dietetic treatment of Herrmannsdorfer by reason of having observed its beneficent effects on a large number of patients. The authors admit that it is a most difficult task to prescribe this diet for the tuberculous patient and make him like it. They say that only those who are sufficiently enthusiastic should undertake the work; that it requires constant supervision, sympathy and attention to the many details which are a constant concomitant of tuberculosis treatment. The book goes into the preparation of meals most minutely, so that any cook and physician can serve unsalted meals to finicky patients in an appetizing form. Unfortunately for some of the recipes, the ingredients are not always obtainable without breaking the prohibition laws. There are certain salts obtainable in Germany, probably proprietary, which seem to pinch hit fairly well for salt. Spices, flavors and sauces are used freely in order to overcome the lack of desirable saline taste. In connection with the salt-free diet, the authors urge the limiting of fluids, finding that in many cases the production of sputum is favorably influenced thereby. While the menus offered by the Herrmannsdorfers are most varied, they will in many cases need some revision before they can be used on American tables. This is not to be considered as an unkind criticism.

Allergy and Applied Immunology: A Handbook for Physician and Patient, on Asthma, Hay Fever, Urticaria, Eczema, Migraine and Kindred Manifestations of Allergy. By Warren T. Vaughan, M.D. Cloth. Price, $4.50. Pp. 359, with 37 illustrations. St. Louis: C. V. Mosby Company, 1931.

The number of books on allergy multiplies merrily. This is apparently the second good book on the subject prepared for both physicians and patients. It provides a comprehensive discussion of asthma, hay fever, urticaria, eczema and migraine. It begins with a discussion of the theory of anaphylaxis and allergy, its history, and its relationship to heredity and to other diseases. A second section deals with allergens in relationship to geographic location, animals, inhalants and foods. The third section deals with diagnosis and gives suggestions as to proper study of the history of the patient. Then comes a section on therapy from the point of view of desensitization and elimination of sensitizing substances. The final sections deal with prognosis, the manifestations of allergy and the relationship of allergy to immunology.

Physicians will find the book a most valuable reference, since it avoids highly technical considerations and deals with the practical aspects of the subject. Patients of college age will be able to follow the work and to realize value from it.

Einführung in die Bakteriologie oder Lehre von den Kleinwesen und ihren Wirkungen: Zum Gebrauch bei Vorlesungen und Übungen sowie zum Selbstunterricht für Ärzte, Tierärzte und Naturforscher. Von Prof. Dr. Walther Kruse, Direktor des Hyg. Instituts der Universität Leipzig. Second edition. Paper. Price, 13.50 marks. Pp. 436, with 78 illustrations. Berlin: Walter de Gruyter & Company, 1931.

This book follows conventional lines and does not show a novel point of view. It is clearly and concisely written and contains the usual material supposed to be desirable in the education of the medical student. Here and there one notices statements that are not well substantiated, such as that in the paragraph on page 55 in which staphylococci from pus are said to be susceptible of differentiation from other staphylococci by their agglutinative qualities. On page 226 it is stated that botulism poisoning through vegetable foods is much more common in America than in Europe on account of the frequent occurrence of the spores of the botulism bacillus in North American soil. The author seems to overlook the fact that the use of canned vegetables is more general in North America. The importance of contact infection in undulant fever (page 204) does not seem to be recognized. It does not seem likely that there will be any demand for a translation of this book into English.

Medicolegal

Examining Physician as Compulsory Witness Against Person Employing Him

(Webb et al. v. Francis J. Lewald Coal Co. et al. (Calif.), 297, P. 958)

One of the plaintiffs had been examined by a physician, apparently for the purpose of enabling him to testify on behalf of her and her husband in a suit for damages for personal injuries she had sustained. At the trial, however, the plaintiffs did not produce the physician as a witness. The defendants thereupon subpenaed him. When called to the witness stand, he refused to testify concerning his examination of the plaintiff or his conclusions from it. He contended that after a physician has made an examination for one party to a suit and his conclusions do not support the contentions of that party, and when he therefore has not been produced as a witness by that party, it would be inequitable to compel him to testify in support of the contentions of the adverse party. If it were known that a physician testified under such circumstances, patients would hesitate to come to him for examination and lawyers would hesitate to send their clients to him. The trial court ruled that the witness could not be compelled to testify. Judgment was given for the plaintiffs, and thereupon the defendants appealed to the district court of appeal, first district, division 1, California, assigning as error, among other things, the refusal of the trial court to compel the physician to testify.

This ruling of the trial court, said the district court of appeal, in reversing the judgment of the trial court, constituted reversible error. However commendable from a professional standpoint may have been the objections of the witness, the policy of the law as declared by the California legislature required him to set aside his scruples and to testify concerning the matters that he had learned from his examination of the plaintiff. When the party examined by him brought suit, she impliedly waived her right to have the results of the examination kept secret, for section 1881, subdivision 4, of the California Code of Civil Procedure provides:

> A licensed physician or surgeon cannot, without the consent of his patient, be examined in a civil action as to any information acquired in attending the patient, which was necessary to enable him to prescribe or act for the patient; . . . provided, further, that where any person brings an action to recover damages for personal injuries, such action shall be deemed to constitute a consent by the person bringing such action that any physician who has prescribed for or treated said person and whose testimony is material in said action shall testify.

If the ruling of the trial court were correct, said the district court of appeal, that the witness could not be compelled to testify unless arrangements were made to compensate him as an expert witness, it would in effect nullify the provision of the law just stated; for then, all a physician need do if he desired to keep off the witness stand would be to demand such compensation for testifying as it would be impracticable for the defendant to pay. That, said the court, is not the law.

> "The authorities, however, all agree that, in the absence of an express contract to pay a physician for his testimony as an expert, he is only entitled to the statutory fee. The uniform rule seems to be that a physician who has acquired knowledge of a patient or of specific facts in connection with the patient may be called upon to testify to those facts without any compensation other than the ordinary witness receives for attendance upon court. In those states recognizing the right to extra compensation for a physician who testifies as an expert it is uniformly held that, where such testimony is sought to be elicited without requiring any particular investigation on the part of the physician, he is required to testify without extra compensation."—*McClenahan v. Keyes, 188 Calif. 574, 583, 206 P. 454, 458.*

Workmen's Compensation Acts: Aggravation of Preexisting Cancer.—An employee was awarded compensation by the Oklahoma state industrial commission on a finding that he had sustained two distinct injuries in the course of his employment, which injuries aggravated a tumor which had existed or had its onset prior to the injuries. Since the last injury, the employee had been totally disabled from the performance of manual labor. It was insisted by the employer on an appeal to the Supreme Court of Oklahoma that the commission should have found that the employee's condition and his disability were the result of a natural cause, that is, cancer. A good deal of testimony, said the court, was taken on that line from medical experts, who disagreed as to the origin of the cancer and as to whether or not an injury could create a cancer or could aggravate one already created, whether latent or growing. The cause of cancer and its cure remain almost as much a mystery today as it did half a century ago, though men have devoted their lives to its study. Considering this and further that by statute, the industrial commission is the final judge as to questions of fact, it cannot be said that the evidence submitted to the commission did not warrant the finding that the injuries complained of aggravated a latent cancer.—*Magnolia Petroleum Co. v. Mayberry (Okla.), 297 P. 260.*

"Unsoundness of Mind"—Competence of Witness.—A Washington statute (Remington's Compiled Statutes, section 1213) declares that a person of "unsound mind" is not competent to testify, but it does not define the term "unsound mind." That term, said the Supreme Court of Washington, must include only those persons who are commonly called insane; that is to say, those suffering from some derangement of the mind rendering them incapable of distinguishing right from wrong. It cannot include the mere ignorant or uneducated, or those who are incapable of receiving all of the impressions within the comprehension of those more commonly gifted. It refers to those who are without comprehension at all, not to those whose comprehension is merely limited. Where the record indicates that a witness is uneducated and may show that he was easily persuaded to commit crime, yet if it clearly shows that he understood the criminality involved in the act to which he testifies and further shows that he was capable of giving a clear statement of the facts leading up to the crime and of the manner of its commission, he is a competent witness.—*State v. Hardung (Wash.), 297 P. 167.*

Malpractice: Physician Liable Only to the Extent of Aggravation of Preexisting Injury.—Where the plaintiff in an action for damages for malpractice has been suffering from a previous disability or infirmity, says the court of civil appeals of Texas, the trial court should take care to state clearly, fully and affirmatively to the jury that the plaintiff is entitled to recover only to the extent that his infirmity was increased or aggravated by the alleged malpractice of the physician-defendant. An injured employee has the right to maintain a suit for damages for malpractice against a physician furnished by the employer if the physician's malpractice has increased or aggravated the industrial injury, even though the employee had first proceeded and obtained compensation under the workmen's compensation law.—*Pedigo & Pedigo v. Croom (Texas), 37 S. W. (2d) 1074.*

Evidence: Delusions as Affecting Testamentary Capacity.—To destroy testamentary capacity, an insane delusion must be such as directly affects the testator in the making of his will and the disposition of his property. Where the delusions under which a testator labored were such as necessarily affected an intelligent and clear comprehension of his true relationship and situation as to his children, of what he had done for them and of his moral obligations to them, and were such as affected the testator's disposing judgment, the testamentary capacity of the testator has been destroyed.—*Erickson v. Lundgren (Mo.), 37 S. W. (2d) 629.*

Life Insurance: "Good Health" of Applicant Defined.—It is competent for the parties to a life insurance contract to stipulate that the contract shall not be deemed to be complete until the delivery of the policy and that it shall not be delivered unless the applicant is at the time in good health. "Good health" as used in such a stipulation is not apparent good health, nor yet a belief of the applicant that he is in good health, but it is that he is in actual good health. Slight troubles or temporary indisposition which will not usually result in serious consequences, and which do not seriously impair or weaken his constitution, do not establish the absence of good health, but if the illness is of a serious nature such as to weaken and impair the constitution and shorten life, the applicant cannot be held to be in good health.—*Klein v. Farmers' & Bankers' Life Ins. Co. (Kan.), 297 P. 730.*

Society Proceedings

COMING MEETINGS

American Association of Anatomists, New York, March 24-26. Dr. George W. Corner, University of Rochester School of Medicine, Rochester, N. Y., Secretary.

American Association of Pathologists and Bacteriologists, Philadelphia, March 24-25. Dr. Howard T. Karsner, 2085 Adelbert Road, Cleveland, Ohio, Secretary.

American College of Physicians, San Francisco, April 4-8. Mr. E. R. Loveland, 133 South 36th Street, Philadelphia, Executive Secretary.

American Orthopsychiatric Association, Baltimore, February 18-20. Dr. George S. Stevenson, 450 Seventh Avenue, New York, Secretary.

Annual Congress on Medical Education, Medical Licensure and Hospitals, Chicago, February 15-16. Dr. William D. Cutter, Secretary, Council on Medical Education and Hospitals, 535 North Dearborn St., Chicago.

Arkansas Medical Society, Little Rock, April 5-7. Dr. William R. Bathurst, 814 Boyle Building, Little Rock, Secretary.

Medical Society of the Missouri Valley, Omaha, Neb., April 5-7. Dr. Joseph D. McCarthy, 107 South 17th Street, Omaha, Secretary.

Pacific Coast Surgical Association, Santa Barbara, Calif., February 25-27. Dr. E. L. Gilcreest, 384 Post St., San Francisco, Secretary.

WESTERN SURGICAL ASSOCIATION

Forty-First Annual Meeting, held at Denver, Dec. 4-5, 1931

(Concluded from page 506)

Carcinoma of the Breast: A Critical Study of Twenty-Four Cases

DR. CHARLES D. LOCKWOOD, Pasadena, Calif.: In 1926 I began the routine postoperative use of radium in primary operable cases of cancer of the breast. I have followed essentially the technic of Handley but have used 12.5 mg. of unscreened radium needles, leaving them in for twenty-four hours. This gives a total dosage of 1,200 milligram hours. In a critical review of twenty-four cases, twelve of which were treated by operation alone, and an equal number in which the postoperative radium was employed, I am convinced that the cases treated with radium have given distinctly better results. All cases were in the operable group, most of them with axillary involvement. There were none in the very early favorable group and none in the hopeless advanced group. All were proved carcinoma cases by microscopic examination. Of the twelve patients treated by radical operation, and, with the exception of two, by postoperative roentgen irradiation, only four lived more than three years. All had recurrences. Of the twelve patients treated postoperatively with radium, seven are living and well three or more years after operation. In five of these there have been no recurrences. One patient lived for five years without recurrence and then a recurrence in the manubrium followed a severe blow on the chest. One recurred in the axillary glands. These were removed by secondary operation and radium again applied to the axillary region. The patient is living three years after the original operation, with no recurrence since the second operation.

Early Operation for Duodenal Ulcer

DR. D. C. BALFOUR, Rochester, Minn.: The selection of cases for early operation would be greatly simplified if it were possible to predict with any accuracy the course of the disease in the individual case. As yet there are no satisfactory criteria on which to base predictions in the uncomplicated case. In the complicated case, that is, when the severity of symptoms or the radiation of pain indicates that extraduodenal involvement has occurred, or when there has been a massive gastro-intestinal hemorrhage, or when motor impairment can be demonstrated, early operation is clearly the best course for the patient to pursue unless it is definitely contraindicated. In the absence of such complications, I believe that there are certain conditions under which operation may properly be advised for early uncomplicated duodenal ulcer. The surgical treatment of the early duodenal ulcer must be in many respects conducted on different principles from the treatment of the more chronic, extensive and complicated lesions. There are three essentials in the surgical treatment of these early cases: The operation is of insignificant risk, it should give good prospects of permanent cure, and it should not interfere with future surgical treatment if ulcer develops subsequently. All three of these essentials usually can be met by direct attack on the ulcer and reconstruction of the pyloric outlet. Early operation for duodenal ulcer also permits removal of the appendix. Whatever the relationship between the appendix and the inflammatory conditions in the duodenum, it is safe to say that in such cases the patient has a better chance of permanent cure if the appendix is removed than if it is not. Operation will also give an opportunity for careful exploration of the abdomen and the exclusion of any other lesions that might have been a factor in the patient's complaint or a precursor of future disease.

Early Diagnosis of Acute Intestinal Obstruction

DR. OWEN H. WANGENSTEEN, Minneapolis: The high mortality in acute intestinal obstruction is due in a large measure to late diagnosis. Factors that contribute to delay in diagnosis are the absence of local abdominal physical signs in simple obstruction; misinterpretation of the significance of the expulsion of gas with enemas; indiscriminate administration of morphine before making a diagnosis, and the equivocal and oftentimes deceptive information obtained with apparently effectual catharsis in partial obstructions. Intermittent colicky pain, associated with nausea and vomiting but unattended by abdominal tenderness or rigidity, suggests a block in the continuity of the bowel. In strangulation types of obstruction, local physical signs are usually present, though not as early as in peritoneal lesions of an inflammatory character. The bowel below the point of obstruction is physiologically as well as anatomically normal and will expel an administered enema with the return of gas and feces. Gaseous shadows in the small intestine demonstrate the presence of intestinal stasis. The stethoscope serves to distinguish whether the stasis is mechanical or paralytic in character. The general condition of the patient is not significantly altered in simple obstruction. In strangulation types there is often quickening of the pulse. Changes in the blood detected by chemical examination obtain regularly only in high intestinal obstructions and are a late occurrence. When the criteria on which the diagnosis can be made early are properly evaluated and patients with acute intestinal obstruction come to operation at an opportune hour, the appalling mortality of the disease will cease to exist. In dealing with the late case of simple obstruction, enterostomy, an indirect procedure and an operation of necessity rather than of election, should be practiced. Decompression of the bowel with the nasal catheter and water siphonage should prove to be a therapeutic agent of great value in many types of simple obstruction and especially in postoperative adhesive obstruction. In strangulation obstruction in which the bowel is not viable, exteriorization and excision with the temporary establishment of a complete fistula followed by secondary anastomosis is to be preferred to primary resection.

Effect of Distention of Bowel on Its Circulation

DRS. W. D. GATCH, JOHN E. OWEN and HAROLD M. TRUSLER, Indianapolis: We conclude from our experiments that intra-intestinal pressure above the diastolic blood pressure prevents absorption of toxin by way of the mesentery, and that intra-intestinal pressure below the diastolic blood pressure probably prevents or hinders such absorption. The possibility of absorption by this route following sudden release of pressure is left undecided. Any absorption of toxin from a bowel inflated by a pressure greater than the diastolic blood pressure must be transperitoneal. We have presented evidence which shows that absorption of the toxic material can take place through a fresh bowel wall rendered anemic by distention. Any absorption from a gangrenous bowel, or from a bowel having its mesenteric circulation blocked, must be transperitoneal. There is considerable evidence to show that the peritoneum in contact with obstructed bowel can react to prevent toxins from entering the circulation. The facts impress us in favor of the views that in strangulations of the bowel the chief route of absorption is transperitoneal, that the body has a fairly effective defense against this absorption, and that it occurs for the most part suddenly and shortly before death. The results of our experiments lent support to the view that the best treatment of advanced ileus is simple relief of obstruction either by means of a high Witzel enterostomy or by gun barrel enterostomy after resection of gangrenous bowel. The risk of leaving a gan-

gangrenous loop of bowel is often less than the risk of exploratory laparotomy. The ability of seminecrotic bowel to recover is phenomenal. Our experiments show that a rapid drop in blood pressure is the most constant indication that absorption of toxic material has occurred. We believe that this makes spinal anesthesia dangerous.

Chemical Aspects of Acute Intestinal Obstruction

DR. THOMAS G. ORR, Kansas City, Mo.: It appears from recent research that, by maintaining sodium chloride balance in the body in upper intestinal tract obstructive lesions, other chemical factors are also maintained in balance. This specific quality of sodium chloride is active in its fullest measure only when sufficient water is supplied to relieve or prevent dehydration. Distilled water and dextrose are not in any sense substitutes for sodium chloride solution in the treatment of obstructive or paralytic conditions of the gastro-intestinal tract.

Indications for Intestinal Drainage—Enterostomy and Colostomy

DR. DONALD MACRAE, Council Bluffs, Iowa: I am convinced that no procedure has added more to the saving of life in my hands than enterostomy. One should not wait for fecal vomiting, or even near fecal vomiting in postoperative cases, or any other obstructive condition. I believe I was the first to advocate jejunostomy or enterostomy during the primary operation when there is the slightest evidence or anticipation of general peritoneal involvement developing after the operation. Drainage of all intussusception cases above the affected segment in every case, early or late, is, I believe, original with me. Many of my prophylactic enterostomy patients no doubt might well do without it, but the convalescence is so delightful to patient and surgeon, and the personal relief of knowing that one may not be required to perform a secondary operation, urge me to continue the practice. In addition, I am satisfied that, when more or less soiling of the peritoneum from early rupture of the appendix, for instance, is present, an occasional death from general infection may be avoided by draining the intestine.

Surgical Problems of the Thyroid

DR. ARNOLD S. JACKSON, Madison, Wis.: A discussion of the principal problems confronting the surgeon doing thyroid operations is given together with a summary of the data on these questions gathered from thirty members of the society. A comparison is also given from answers to questionnaires sent to the leading thyroid clinics. Among the problems considered is that of the iodine-fast exophthalmic goiter case in which it is pointed out that the risk of operation has been materially increased as a result of the prolonged use of iodine. Eighteen deaths as reported by those answering the questionnaires are cited as proof of this contention. The use of digitalis is discussed, also iodine in toxic adenoma. The advantages of the radio knife in performing thyroidectomy are stressed. A greater part of the goiter can be destroyed with a higher degree of safety and in a shorter time than with the scalpel. Postoperative progressive exophthalmos with hypothyroidism is discussed, also drainage after thyroidectomy; toxic goiter and pregnancy; radiotherapy; the postoperative use of iodine, and the decreasing incidence of toxic goiter.

Diagnosis and Surgical Treatment of Cysts of Thyroglossal Duct

DRS. FRED W. RANKIN and NORMAN W. CRISP, Rochester, Minn.: Surgical extirpation of a cyst of the thyroglossal duct or a sinus of the thyroglossal duct is either a complete success or an absolute failure. There is no compromise in the estimation of results; few, if any, other operations of election have such an arbitrary prognosis. We have had little satisfaction in the confirmation of diagnosis by injecting the fistula with some opaque substance. Occasionally, in operating it has proved advantageous to inject methylene blue (methylthionine chloride, U. S. P.) into the tract, but since the technic used as a routine has given such satisfactory end-results this, too, has been abandoned. We have deviated little from the operative treatment as outlined by Sistrunk in 1920, the extirpation of the sinuses and cysts by this method being simple and satisfactory. Since Sistrunk's report, the number of consecutive cases of the cyst or sinus thyroglossal duct in the clinic has risen to 200. In more than 100 of these, operations, usually multiple, had been performed prior to the patient's admission; in one case as many as ten operations had been performed. The procedures had varied from incision and drainage, which, obviously, is indicated in the presence of acute inflammation, to curettement and incomplete excision. It was possible to do the complete operation in one stage in 175 of these 200 cases. In 9 cases in which acute infection was present, incision and drainage had to be done. In the 184 cases in which complete extirpation was done there has been no recurrence of trouble. In the remaining sixteen cases, because of extensive scarring and various degrees of infection, the tract could not be removed completely, but thus far recurrence of trouble has not been noted. However, further trouble may occur. One patient has returned recently who had been operated on before the Sistrunk operation was in vogue and apparently had been cured sixteen years ago. The duct then recurred, and its extirpation by the standard technic thus far has not been followed by recurrence or any evidence of failure.

The Pain of Tumors of the Spinal Cord

DR. WINCHELL M. CRAIG, Rochester, Minn.: The history of pain is probably one of the principal features in the differential diagnosis between tumors of the spinal cord and lesions elsewhere in the body which produce similar symptoms. In a large percentage of cases, the symptom of pain is associated with some motor or sensory derangement which immediately gives a clue as to the nature of the underlying pathologic process. However, there are some cases of tumor of the spinal cord in which pain persists as the outstanding symptom for a number of months, or even years, proving so resistant to the more conservative forms of treatment that more radical measures seem imperative and, in the apparent absence of associated neurologic symptoms, operations on the abdomen or other regions are often carried out in the mistaken hope of relieving this pain. In reviewing a large series of cases of tumor of the spinal cord, it was found that such surgical procedures had been carried out in more than 10 per cent of the cases. Examples of these cases are presented in an effort to emphasize that, if the type of pain suggests that it may be of central origin, it is necessary to analyze the pain and to make repeated neurologic and other examinations, even in the presence of other coexisting pathologic changes.

Statistics of Appendicitis

DR. CARL E. BLACK, Jacksonville, Ill.: In a table made up from fifty-two reports in standard surgical journals, an attempt was made to secure a basic average mortality in the several types of appendicitis cases. These reports were from more than 150 hospitals and comprised the work of more than 1,500 surgeons with 83,144 cases. While the results in the several categories varied from a mortality of 0.036 per cent in acute cases reported by Quain of Bismarck, N. D., to 42 per cent reported by Tucker of Wisconsin (Kirchner's cases from twenty-three hospitals), the final results may be summarized as follows: general mortality, 4.09 per cent; acute cases, 4.88 per cent; chronic cases, 0.99 per cent; suppurative cases, 10.15 per cent (or, omitting 10,000 cases by Kirchner covering a period of thirty years, 7.87 per cent); gangrenous cases, 8.73 per cent, and spreading peritonitis cases, 21.19 per cent. This summary furnished the basic average mortality figures for appendicitis. A comparison of these cases was made with my own statistical results from a study of the appendicitis cases from Passavant Memorial Hospital for nine years. In my group there were nine operators with an average mortality for the period of 4.88 per cent. By deducting the cases of one surgeon in my group, the mortality would be reduced more than 1 per cent.

Cautery Excision of Malignant Cervix Uteri After the Method of Wertheim

DR. JAMES F. PERCY, Los Angeles: I duplicate the operation originally performed by Wertheim with the cold knife with one that has a cauterizing heat—not diathermy. The malignant growth in the vagina is first thoroughly cooked with the cautery so that the fixed pathologic areas are not only sterilized but made movable. The operation is then completed from the abdominal side, also with the cautery knife.

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

American J. Medical Sciences, Philadelphia

182: 741-896 (Dec.) 1931

Observations on Etiologic Relationship of Achylia Gastrica to Pernicious Anemia: Part IV. W. B. Castle, C. W. Heath and M. B. Strauss, Boston.—p. 741.

*Hodgkin's Disease of Bone Marrow and Spleen Without Apparent Involvement of Lymph Nodes. E. B. Krumbhaar, Philadelphia.—p. 764.

*Cardiac Pain and Sudden Death. A. Lambert, New York.—p. 769.

Concerning Certain Phases of Angina Pectoris Based on Study of 350 Cases. H. Brooks, New York.—p. 784.

*Experimental Chronic Hyperparathyroidism: I. Metabolism Studies in Man. J. L. Johnson and R. M. Wilder, Chicago.—p. 800.

Diabetic Pyorrhea. J. B. Williams, Richmond, Va.—p. 807.

*Immune Transfusion in Lobar Pneumonia. A. L. Barach, with assistance of M. Soroka, New York.—p. 811.

Cholagogue Effect of Intravenous Injection of Sodium Dehydrocholate, with Résumé of Literature on Bile Salt Metabolism. R. F. Sterner, H. J. Bartle and R. B. V. Lyon, Philadelphia.—p. 822.

Survey of Diphtheria Prevention in Philadelphia. E. L. Bauer, Philadelphia.—p. 839.

*Clinical Observations on So-Called Leather-Bottle Stomach. J. Friedenwald and T. H. Morrison, Baltimore.—p. 847.

Hodgkin's Disease.—Krumbhaar reports the case history and necropsy observations in a fatal case of Hodgkin's disease that was practically limited to the spleen and bone marrow, though in these two organs the involvement was extensive. The histologic appearance of the femoral bone marrow suggested that the disease process may have been primary in this tissue. Absolutely no lymph node involvement could be found, and the lymphoid tissue of the gastro-intestinal tract was histologically unchanged. While this does not constitute unequivocal proof of the absence of lymph node involvement, it points strongly in that direction. The absence of lesions in the mucosae and of the so-called germinal centers in the spleen suggest interesting speculations as to the type of cell in which the disease process originates. The author suggests that the disease should be considered a disease of the hemolytopoietic or the reticulo-endothelial system rather than of lymphoid tissue.

Cardiac Pain and Sudden Death.—According to Lambert, the most frequent cause of sudden death is not cerebral hemorrhage but some cardiac lesion. Sudden death is not of common occurrence in heart disease when all forms of heart disease are considered. Pathologic anatomy does not offer an explanation of cardiac pain. Experimental evidence strongly indicates that the myocardial muscular tissue is insensitive and does not cause pain by ischemia or failure of action through anoxemia or degeneration. Cardiac pain is expressed only through the afferent nerves of the sympathetic portion of the autonomic nervous system. Cardiac pain occurs when functional failure of normal reflexes produces conditions that stimulate the afferent nerve endings in the adventitia of the aorta and coronary vessels. Experimental evidence also strongly indicates that vascular distention rather than vascular spasm is the usual cause of cardiac pain.

Chronic Hyperparathyroidism.—Johnson and Wilder report that the repeated injection of parathyroid extract produced, in puppies and young rats, a uniform skeletal abnormality that is characteristic of osteitis fibrosa osteoplastica (von Recklinghausen). A lacunar resorption of the trabeculae and corticalis of bones resulted, with replacement of marrow and cortex by fibrous connective tissue and osteoid tissue. Giant cells appeared and cysts were formed. The administration of viosterol together with parathyroid extract did not modify significantly the end-results. The results of the experiments confirm the view that the pathogenesis of osteitis fibrosa osteoplastica, as this disease is observed spontaneously in man, is an oversupply of parathyroid hormone and that this disease bears no relation, etiologically, either to osteomalacia or to rickets.

Immune Transfusion in Lobar Pneumonia.—Eight cases of pneumococcus lobar pneumonia, six due to pneumococcus type III and two to pneumococcus type II, were treated by Barach and Soroka by transfusion of from 1,000 to 1,600 cc. of blood from donors immunized over long periods. No favorable effect was observed on the clinical condition of the patient as a result of any of the transfusions. The introduction of a protective substance present in the donor's blood could not be demonstrated in the patient's blood in the five fatal cases and appeared to have no influence on the course of the disease in the three recovered patients.

Leather-Bottle Stomach.—Friedenwald and Morrison believe that the term "leather-bottle stomach," as suggested by Wyard, should be reserved as a general term for a number of conditions which though similar in gross appearance present, however, a varied pathology. Clinically, it is rarely possible to differentiate these types. This condition may present a local or a diffuse involvement. The term "linitis plastica" should be discarded and a more appropriate term, such as "carcinoma plastica," be substituted. The condition is represented by a small-cell epithelioid growth having definite pathologic characteristics, the diagnosis of which cannot be made except following a most painstaking microscopic examination. The clinical as well as the roentgen manifestations of leather-bottle stomach are similar, no matter what the characteristic pathologic changes may represent. These manifestations are largely those of carcinoma, though there appears to be a type that is definitely not malignant. The carcinoma plastica and fibromatosis forms produce death by inducing profound anemia and malnutrition; the scirrhous carcinomatous type, largely as the result of metastases. The treatment is surgical; the only hope for a complete cure lies in radical surgery in the form either of pylorectomy or of gastrectomy. Occasionally, palliative measures such as gastro-enterostomy may afford relief.

American Journal of Physiology, Baltimore

99: 1-278 (Dec.) 1931

Studies on Dog's Cortex: I. Sensorimotor Areas. S. H. Bartley and E. B. Newman, Kansas City, Kan.—p. 1.

Observations on Adrenalectomy in Marsupial, Hibernating and Higher Mammalian Types. S. W. Britton, Charlottesville, Va.—p. 9.

Some Effects of Cortico-Adrenal Extract and Other Substances on Adrenalectomized Animals. S. W. Britton and H. Silvette, Charlottesville, Va.—p. 15.

Induction of Precocious Sexual Maturity by Cortico-Adrenal Extract. E. L. Corey and S. W. Britton, Charlottesville, Va.—p. 33.

*Oral Administration of Cortico-Adrenal Extract. S. W. Britton, J. C. Flippin and H. Silvette, with assistance of R. Kline, Charlottesville, Va.—p. 44.

*Studies in Physiology of Exercise: VII. Modification of Colonic Motility Induced by Exercise and Some Indications for Nervous Mechanism. V. R. DeYoung, H. A. Rice and A. H. Steinhaus, Chicago.—p. 52.

Delimitation of Central Nervous Mechanism Involved in Reflex Hyperglycemia. C. M. Brooks, Jersey City, N. J.—p. 64.

Secretion of Phenol Red by Mammalian Kidney. F. K. Marshall, Jr., Baltimore.—p. 77.

Studies in Motor Activity of Large Intestine: II. Influence of Balloon Technic on Colon Motility. H. Lawson and R. D. Templeton, Chicago.—p. 87.

*Studies on Physiology of Secretin: IV. Effect on Secretion of Bile. E. U. Still, J. W. McBean and F. A. Ries, Chicago.—p. 94.

Excretion of Urine in Dog: II. Urea and Creatinine Clearance on Cracker Meal Diet. N. Jolliffe and H. W. Smith, New York.—p. 101.

Irritability Changes in Nerve in Response to Subthreshold Induction Shocks, and Related Phenomena Including the Relatively Refractory Phase. J. Erlanger and E. A. Blair, St. Louis.—p. 108.

Irritability Changes in Nerve in Response to Subthreshold Constant Currents, and Related Phenomena. J. Erlanger and E. A. Blair, St. Louis.—p. 129.

*Afferent Paths of Nerves Involved in Vomiting Reflex Induced by Distention of an Isolated Pyloric Pouch. S. L. Goldberg, Rochester, Minn.—p. 136.

Secondary Rise in Blood Pressure Following Peripheral Splanchnic Nerve Stimulation. V. Johnson and Adelaide Johnson, Chicago.—p. 160.

Central and Peripheral Latencies in Some Tendon Reflexes of Rat. R. Y. Herren and D. B. Lindsley, Iowa City.—p. 167.

Osmotic Relations of Blood and Glandular Secretions: I. Regulatory Action of Total Blood Electrolytes on Concentration of Gastric Chlorides. A. Gilman and G. R. Cowgill, New Haven, Conn.—p. 172.

Inquiries into Structure and Function of Myenteric Plexus: I. Differences in Reaction of Muscle and Nerves of Bowel to Constant and Interrupted Currents. W. C. Alvarez and Mildred Foster Bennett, with assistance of Eola Woolley, Kiyoshi Hosoi and E. J. Blades, Rochester, Minn.—p. 179.

Some Effects of Fresh Pituitary Homo-Implants and of Gonad-Stimulating Substance from Human Pregnancy Urine on Reproductive Tract of Male Rat. C. R. Moore and Dorothy Price, Chicago.—p. 197.

Passage of Materials Through Intestinal Wall: I. Relation Between Intra-Intestinal Pressure and Rate of Absorption of Water. H. S. Wells, Nashville, Tenn.—p. 209.

*Effect of Diet of Polished Rice on Mineral Content of Carcasses of Pigeons. J. S. McHargue and W. R. Roy.—p. 221.

Study of Spontaneous Activity in Excised Uterine Horns of Rat, by an Improved Method. O. G. Harne, Baltimore.—p. 227.

*Studies on Flow of Bile into Duodenum and Existence of a Sphincter of Oddi. H. C. Lueth, Chicago.—p. 237.

Posterior Pituitary Hormone in Metabolism: II. Effect of Pitressin and Pituitrin on Carbohydrate Reserves of Adrenalectomized Rabbits. F. Bischoff and M. Louisa Long, with assistance of R. D. Evans, Santa Barbara, Calif.—p. 253.

Effects of Thyroid Feeding on Heart Rate in Normal Dogs and in Dogs with Completely Denervated Hearts. Margaret McIntyre, Chicago.—p. 261.

*Menstruation in Pithecus (Macacus) Rhesus Following Bilateral and Unilateral Ovariectomy Performed Early in Cycle. G. van Wagenen and S. B. D. Aberle, New Haven, Conn.—p. 271.

Oral Administration of Corticosuprarenal Extract.—Britton and his associates demonstrate the effectiveness of corticosuprarenal extract given by mouth. It prolongs considerably and possibly indefinitely the lives of suprarenalectomized cats and brings about complete recovery from even the severest symptoms of suprarenal insufficiency, when given by the oral route. The low blood sugar values found in suprarenalectomized animals are markedly increased, and the high nonprotein nitrogen values and blood cell volumes are reduced toward or to the normal levels, during the recovery period. Animals that have refused food may be induced to eat within an hour after administration of the extract. These observations are in keeping with those produced by intraperitoneal injection of the material. Large amounts of the extract, approximately three to five times the intraperitoneal dosage, were necessary by mouth in order to produce comparable results. Epinephrine given by mouth in similar concentration to that found in corticosuprarenal extract, and also dextrose solutions, have no noteworthy effect on suprarenal insufficiency.

Effect of Exercise on Colonic Motility.—The effects of short periods of strenuous treadmill running on the motility of the colon of dogs completely recovered from appropriate surgical intervention were recorded by DeYoung and his associates by the balloon method in a series of nine dogs. It was found that during an exercise period there is in a majority of cases a marked rise in colonic tone and motility. The rise is not coextensive with the running period. It begins usually from one to three minutes after the start of exercise and recedes after a few minutes without reference to the duration of exercise. From studies following a variety of denervation procedures it is concluded that the appearance of the rise depends on the intactness of at least one of two parasympathetic inflows, probably vagal, entering the colon over the ileocecal juncture from above. The rise did not appear in a dog that ran with evident fear of the treadmill until after he had been conditioned to run without this emotion. Following the exercise period there is usually a period of subnormal activity of varying length—sometimes as long as forty-five minutes.

Physiology of Secretin.—According to Still and his associates, the cholagogue action of secretin is not due to metabolites arising from the pancreas or other abdominal viscera. Secretin, alone, stimulates the hepatic cells, resulting in an augmentation in the flow of bile, which in acute and chronic experiments of from eight to ten hours in length contain lower concentrations of the bile salts. Secretin does not cause circulatory changes in the liver as measured by the liver volume method.

Vomiting Reflex from Distended Pyloric Pouch.—Goldberg describes experiments in which he noted that reflex vomiting can be induced by distending an isolated pyloric pouch until the pressure within the pouch rises above a certain constant level which can be definitely measured. The afferent side of this reflex arc is entirely through the vagus nerves. Supposedly denervated pouches contain enough intact vagus fibers to carry these afferent impulses.

Mineral Content of Pigeons Fed Polished Rice.—McHargue and Roy state that, in polishing brown rice, substances containing considerable quantities of ash, manganese, iron, calcium, magnesium, phosphorus and potassium are removed in the offal. When pigeons are fed polished rice until polyneuritis develops, analyses of the ash of their carcasses show marked diminution in magnesium, phosphorus and potassium content as well as in the content of some of the minor constituents. Unpolished rice, wheat and yellow corn cured polyneuritis and restored normal body weight, showing that they contained vitamin B_1 and B_3 factors, though yellow corn produced slower recovery and gain in body weight than unpolished rice and wheat. Barley, rye and white corn contained vitamin B_1 but were deficient in the vitamin B_3 factor. Wheat, unpolished rice and yellow corn contained more of the elements copper, manganese and iron than barley, rye and white corn, which leads the authors to infer that the minor mineral constituents as well as the major constituents calcium, magnesium, phosphorus and potassium are factors in protecting pigeons from polyneuritis.

Function of Sphincter of Oddi.—Lueth is convinced that the intramural portion of the common bile duct possesses a special sphincteric mechanism, that a sphincter of the papilla exists and that this sphincteric mechanism is intimately coordinated with duodenal peristalsis and tone but may function independently of the duodenum. His data do not permit him to conclude whether the portion of the sphincteric mechanism located in the duodenal musculature has a reciprocal relation with the sphincter of the papilla or whether it functions independently of the duodenal musculature.

Menstruation Following Ovariectomy in Monkey.—In Pithecus (Macacus) rhesus, van Wagenen and Aberle found that excision of both ovaries early in the cycle (from seventy-two hours to the tenth day and in one instance on the thirteenth day) was followed by menstruation after an interval of five or six days. In amount and duration the sagulneous discharge was not distinguishable from the normal menses of the individual animal. Microscopic examination of the ovaries showed that bleeding could occur in the absence of a mature follicle or young corpus luteum. Menstruation from an endometrium of interval type occurred in animals operated on on the fourth and fifth days of the cycle. Removal of a single ovary on the fourth day of the cycle was followed in one case by menstruation on the fourth day following the operation, but in another animal no postoperative menstruation occurred. Both bilateral and unilateral ovariectomy failed to induce bleeding when performed on the first day of menstruation.

American Journal of Surgery, New York

14: 591-796 (Dec.) 1931

*Diagnostic and Therapeutic Injections of Sympathetic Nerves. P. G. Flothow, Seattle.—p. 591.

Some Thoughts on Problem of Cancer Control. W. B. Coley, New York.—p. 605.

Hemorrhoids: Medical Aspect. J. L. Kantor, New York.—p. 620.

Hemorrhoidectomy by Means of High Frequency Current. W. Bierman, New York.—p. 626.

Case of Uterine Fibroid Separated from Its Pedicle. H. J. Shelley, New York.—p. 631.

Hysterosalpingography by Means of Iodized Rapeseed Oil. A. Mathieu, Portland, Ore.—p. 634.

Staphylococcemia Following Cesarean Section: Recovery: Case of Rare Anatomic Anomaly. J. Halperin, Brooklyn.—p. 637.

Focal Infection. C. E. Galloway, Evanston, Ill.—p. 643.

*Diagnostic Pneumothorax: Guide in Localization, Treatment and Prognosis of Pulmonary Abscesses. W. B. Faulkner, Jr., San Francisco.—p. 646.

Unilateral Idiopathic Hypertrophy of Male Breast. F. Christopher, Winnetka, Ill.—p. 652.

Effect of "Avertin" on Normal and Impaired Liver. W. Bourne and B. B. Raginsky, Montreal, Canada.—p. 653.

Clinical Management of Horseshoe Kidney. R. Gutierrez, New York.—p. 657.

Injections of Sympathetic Nerves.—Flothow states that the most satisfactory diagnostic procedure for conditions affected by the sympathetic nervous system is the direct injection of the sympathetic nerves with procaine hydrochloride. By means of these diagnostic injections it is possible to determine accurately whether or not therapeutic measures should be directed

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toward the sympathetic nervous system. The two factors most frequently involved are pain and diminished blood supply. Diagnostic injection gives definite information as to the relief of pain and as to the quantitative increase in vascularity that may be obtained by therapeutic measures. Alcohol injection of the sympathetic nerves is an established therapeutic measure. The author has used it successfully in arteriosclerotic conditions, Buerger's disease, Raynaud's disease, chronic polyarthritis, trifacial neuralgia, atypical facial pains, angina pectoris, trophic ulcers, neurotrophic skin lesions, diabetic neuritis, and other conditions. Tables are presented including sixty-four diagnostic injections, forty-eight of which were followed by alcohol injection with uniformly good results. Alcohol injection may be used as a substitute for surgical removal of sympathetic ganglions when the latter is not indicated. Alcohol injection does not have the permanence of the operation and is therefore not indicated when permanent maximum blood supply is essential, except when operation is definitely contraindicated. Alcohol injection can be used more successfully than the LeRiche operation in all the conditions for which this operation has been advocated. Surgery or alcohol injection on the sympathetic nervous system should be preceded by diagnostic procaine injection. This diagnostic injection has taken sympathetic therapeutic measures entirely out of the realm of guesswork.

Diagnostic Pneumothorax.—Faulkner believes that diagnostic pneumothorax has a wide application in thoracic surgery. It is easy to perform and in properly selected cases is rarely followed by complications. The use of this procedure permits early selection of cases that probably will require surgery and allows one to recognize those that are likely to show recovery by conservative measures. The employment of pneumothorax along with bronchoscopy and iodized oil has increased the author's percentage of cures and has avoided operation in a number of cases.

American Review of Tuberculosis, New York

24: 605-794 (Dec.) 1931

*Bronchoscopic Treatment of Bronchiectasis and Lung Abscess. L. H. Clerf, Philadelphia.—p. 605.
*Surgical Treatment of Bronchiectasis and Lung Abscess. S. W. Harrington, Rochester, Minn.—p. 612.
Pathology of Bronchiectasis and Lung Abscess. B. S. Kline, Cleveland. —p. 626.
*Extrapleural Paraffin Filling in Thoracic Surgery. W. L. Rogers, San Francisco.—p. 636.
*Diabetes and Pulmonary Tuberculosis. A. L. Banyai, Wauwatosa, Wis. —p. 650.
*Pulmonary Tuberculosis Complicating Diabetes Mellitus. H. B. Gotten, Memphis, Tenn.—p. 668.
Some Considerations of Nutrition Problem in Pulmonary Disease. B. Gordon and E. S. Tai, Philadelphia.—p. 673.
Vincent's Infection of Mouth in Tuberculosis Patients. W. F. Drea, Colorado Springs, Colo.—p. 678.
*Treatment of Morphine Addiction in Tuberculosis by Pavlov's Conditioning Method. C. Rubenstein, Duarte, Calif.—p. 682.
Specificity of Light Action in Experimental Tuberculosis. Ethel M. Luce-Clausen and Stanhope Bayne-Jones, Rochester, Minn.—p. 686.
*Effect of Environment on Normal and Tuberculous Guinea-Pigs. Myrtle Greenfield, Albuquerque, N. M.—p. 695.
*An Interpretation of Pathology of Pulmonary Tuberculois. E. M. Medlar and K. T. Sasano, Mount McGregor, N. Y.—p. 705.
Comparison of Effects of Viosterol in Acute Experimental Avian and Bovine Tuberculosis. T. D. Spies and T. T. Walker, Boston.—p. 723.
Biochemical Studies of Bacterial Derivatives: XV. Changes in Chemical and Biologic Properties of Human Tubercle Bacillus Polysaccharide MB-200 Produced by Mild Acid Hydrolysis. K. L. McAlpine and P. Masucci, Glenolden, Pa.—p. 729.
Id.: XVI. Some Differential Chemical Changes Accompanying the Growth of Human Tubercle Bacillus H37 and Bovine Tubercle Bacillus 523 Grown on Long's Synthetic Medium. P. Masucci, K. L. McAlpine and J. T. Glenn, Glenolden, Pa.—p. 737.
Discussion of Certain Fat Constituents of Acid-Fast Bacteria. R. J. Anderson, New Haven, Conn.—p. 746.
Some Observations on Chemical and Biologic Properties of Phosphatide from Tubercle Bacillus. C. H. Boissevain and C. T. Ryder, Colorado Springs, Colo.—p. 751.
Pathogenic Properties of B C G. A. Boquet, Paris, France.—p. 764.
Present Knowledge of Innocuousness of B C G. R. Kraus, Santiago, Chile.—p. 778.

Bronchoscopic Treatment of Bronchiectasis and Lung Abscess.—Clerf is of the opinion that in pulmonary abscess, bronchoscopy should be considered a part of the conservative plan of treatment if there is evidence of interference with drainage. Every case of unilateral bronchiectasis should have the advantage of diagnostic bronchoscopy to rule out possible endobronchial lesions. This is particularly important if surgical treatment is contemplated. In bilateral bronchiectasis occurring in adults, bronchoscopy is an aid to the internist and its benefits are temporary; in children, bronchoscopy combined with other appropriate measures is often followed by excellent results.

Surgical Treatment of Bronchiectasis and Lung Abscess.—Harrington states that pulmonary suppuration is usually progressive. The surgical treatment should be as conservative as possible and consistent with effectual treatment. The most common operative procedures are artificial pneumothorax, phrenicotomy, surgical collapse and partial pneumonectomy. The type of operation depends on the time in the course of the disease that treatment is instituted, the situation and extent of the lesion, and the general condition of the patient. In most cases multiple operative procedures are required to effect symptomatic cure. The operative procedures and results are given concerning 111 cases. There were 10 deaths (9 per cent). In 64 cases (66 per cent) there was cure or from 50 to 90 per cent relief of symptoms, and in 16 cases (17 per cent) symptoms were not relieved. The pulmonary infection was due to malignant lesions in 5 cases and to actinomycosis in 2 cases, with temporary improvement of symptoms due to relief of sepsis.

Extrapleural Paraffin Filling.—Rogers believes that extrapleural compression has rightfully won a place in the surgical treatment of chest disease. This method broadens, to some extent, the indications for surgical intervention. The results are gratifying when one adheres to the more specific indications. The paraffin mixture is probably the best compression substance available at present. In the future a substance that will have a lasting effect of continuous pressure and that will eventually be absorbed or assimilated by fibrous tissue invasion may be found.

Diabetes and Tuberculosis.—Banyai presents an analysis of thirty-one cases of diabetes mellitus complicated by pulmonary tuberculosis. Tuberculosis complicating diabetes often has an insidious onset and larvad, atypical forms. Unusual, subapical or perihilar localization is frequent; bronchopneumonic lesions dominate the picture. The cause of lack of symptoms and absence of physical signs in early cases may be sought in the nature and localization of the disease, and in the fact that acidosis is liable to mitigate or suppress allergic reactions and that in the aged (40.9 per cent of Joslin's diabetic tuberculous patients were 50 years or older) the symptoms of tuberculosis are often inconspicuous and the physical signs hard to detect because of physiologic changes characteristic of this age period. In the presence of respiratory or constitutional symptoms or signs, or when diabetes is well under control and the patient is still not doing well, the presence or absence of pulmonary tuberculosis must be ascertained by means of stereoscopic roentgenograms. When the pulmonary disease reaches advanced stages, symptoms become more manifest and physical signs more easily detectable. The author has never seen insulin cause any focal or constitutional reaction. The indications and contraindications for surgical intervention are the same as in nondiabetic patients.

Tuberculosis and Diabetes.—Gotten considers pulmonary tuberculosis complicating diabetes a serious condition, carrying a mortality rate of over 50 per cent in the first year after onset. These patients apparently have a lower state of resistance than the nondiabetic patients. However, with a most careful course of treatment, embracing the use of insulin and a proper adjustment of diet for maintaining adequate nutrition, many can be restored to health.

Treatment of Morphine Addiction.—Rubenstein states that in tuberculosis one is not infrequently confronted with the problem of treating narcotic addiction. By reason of their proneness to aggravate the chest condition, the usual withdrawal methods have proved far from satisfactory in their application to the tuberculous patient. The author has successfully applied Pavlov's conditioning method at the Los Angeles Sanatorium to two persons with pulmonary tuberculosis who were addicted to the morphine habit. In both cases it was found that the treatment was rapid and effective and did not produce the so-called withdrawal symptoms.

Effect of Environment on Normal and Tuberculous Guinea-Pigs.—Greenfield points out that normal guinea-pigs live longer in an open building than they do in either a wooden or a glass building. Offspring of normal guinea-pigs housed in an open, a wooden or a glass building are able to live and produce young. Guinea-pigs are more able to combat a tuberculous infection when they are housed in an open building than they are when housed in either a wooden or a glass building. The percentage of days of life lost because of tuberculous infection in an open building is 11.6, in a wooden building 32, and in a glass building 24.1. Offspring of tuberculous guinea-pigs housed in an open building are able to live and produce young, while offspring of tuberculous guinea-pigs housed in either a wooden or a glass building live only a short time.

Interpretation of Pathology of Pulmonary Tuberculosis.—According to Medlar and Sasano, massive pulmonary tuberculosis in the rabbit is dependent on the rupture of pulmonary tuberculous abscesses into the bronchial tree and inhalation of the contents of these abscesses into the previously uninvolved lung tissue. It seems plausible that this is also the method of extensive dissemination of tuberculosis within the human lung. The pathology of pulmonary tuberculosis is essentially a process of inflammation and repair. Interpreted on the basis of inflammation and repair, the complex pathology becomes greatly simplified and more easily understood. The authors believe that the complex terminology used to describe the bizarre pathology of pulmonary tuberculosis is unnecessary and confusing. The term "specific" when used in connection with tuberculous lesions should be restricted to denote a biochemical, not a morphologic, specificity.

Annals of Surgery, Philadelphia

45: 961-1129 (Dec.) 1931

*Bacterial Synergism in Disease Processes, with Confirmation on Synergistic Bacterial Etiology of Certain Type of Progressive Gangrene of Abdominal Wall. F. L. Meleney, New York.—p. 961.

*Spina Bifida: Clinical Study with Report of Twelve Personal Cases. W. T. Coughlin, St. Louis.—p. 982.

Brilliant Green: Clinical Study of Its Value as Local Antiseptic. J. K. Narat, Chicago.—p. 1007.

*Some Indications for Section of Posterior Root of Trigeminal Nerve Through Posterior Fossa. W. P. van Wagenen, Rochester, N. Y. —p. 1013.

Penetrating Wounds of Abdomen. A. E. Billings and A. Walkling, Philadelphia.—p. 1018.

Evaluation of Results in 324 Gastric and Duodenal Ulcers. J. W. Hinton, New York.—p. 1044.

*Volvulus of Sigmoid Megacolon. C. Weeks, New York—p. 1050.

Diverticulum of Male Urinary Bladder. J. C. O'Day, Honolulu, Hawaii.—p. 1061.

Extirpation of Pregnant Uterus at Full Term. W. Wertenbaker, Wilmington, Del.—p. 1066.

*Interparietal Hernias. W. E. Lower and N. F. Hicken, Cleveland. —p. 1070.

Duodenal Hernia. O. S. Cofer and H. S. Phillips, Atlanta, Ga.—p. 1088.

Roentgenographic Visualization of Arteries of Extremities in Peripheral Vascular Disease. H. E. Pearse, Jr., and S. L. Warren, Rochester, N. Y.—p. 1094.

*Gangrene of Finger Following Digital Nerve Block Anesthesia. J. H. Garlock, New York.—p. 1103.

Bacterial Synergism in Disease Processes.—In connection with two cases of progressive gangrene of the abdominal wall, Meleney emphasizes the fact that both occurred following the drainage of a peritoneal abscess, presumably of appendical origin. In both, the streptococcus was present in the first cultures. In both cases the peritoneal infection took care of itself. In both, the gangrene developed in the region of silkworm-catgut retention sutures. Both patients complained bitterly of the pain associated with the lesion. In both, conservative treatment failed to check the progress of the disease. Both recovered promptly after the wide excision of the lesion. In both instances the micro-aerophilic streptococcus (anaerobic by preference) was found in pure culture far out in relatively normal tissues and in the red zone beyond the gangrene. In both cases the gangrenous tissue contained both the streptococcus and the staphylococcus. Practically identical results were obtained when the organisms from these two cases were injected into experimental animals. The fact that these organisms have an adjuvant action on one another seems to be confirmed by the animal experiments. The nature of this phenomenon has not been clearly shown and will have to await further experimentation. The results of the author's study so far seem to indicate that one organism does not initiate a process which the other completes at a later time, as is the case with a combination of proteolytic and saccharolytic organisms. The study indicates rather that it is necessary for them to be growing together intimately and that the product which is the cause of the gangrene is made by the action of one organism on some intermediate product of metabolism produced by the other, as is the case with certain combinations of fermentative bacteria.

Spina Bifida.—Coughlin is of the opinion that, by rigidly following a technic which he outlines, the operative mortality in spina bifida should be 0. An open sac alone is not a contraindication to operation. The diagnosis of myelocele does not always contraindicate operation. The diagnosis may be wrong when the defect is in the lumbosacral region. A total paralysis of the sphincters, in the presence of a myelocele, is a distinct contraindication to operation. In meningomyelocele the only way to be certain with regard to the presence of the cord in the sac is to open and look within it. Infants aged less than 4 days stand the operation best. The author believes that there is no need to make any kind of osteoplastic reconstruction of the spinal canal. Paralyses in certain cases of meningomyelocele are improved by operation.

Section of Posterior Root of Trigeminal Nerve.—Van Wagenen reports five cases in which section of the posterior root of the trigeminal nerve was of necessity done for the relief of pain. In one of these cases the operation was combined with a unilateral upper cervical dorsal rhizotomy. The impression is gained from these and other cases that, while the operation is considerably more hazardous and difficult than that through the temporal route, it is a valuable adjunct to the neurosurgical armamentarium. No evidence was gained from this series of cases that the type or area of anesthesia differs from that which occurs when the trigeminal root is sectioned by way of the temporal fossa, provided the root is totally divided. In two instances in which only the lower half of the nerve was sectioned there was a preservation of sensation over the face in all but several localized areas.

Sigmoid Megacolon Volvulus.—Weeks points out that there is a definite clinical entity known as volvulus of a megacolon of the sigmoid. In the majority of cases the dilatation in this condition is limited to the sigmoid. This condition, unlike uncomplicated Hirschsprung's disease, occurs in middle age. To prevent further recurrence, the involved loop should be resected, preferably by the Mickulicz procedure.

Interparietal Hernias.—According to Lower and Hicken, interparietal hernia is a term used to designate a group of hernias that occur in the inguinal region between the various layers of the abdominal muscles and are classified according to the anatomic location of the hernial sac. Properitoneal hernia includes all those cases in which the hernial sac lies between the peritoneum and the transversalis fascia; 119 such cases have been reported. In interstitial hernia the sac lies between the transversalis fascia and muscle, between the transversalis and internal oblique muscles, or between the two oblique muscles; 348 such hernias have been reported. In superficial hernia the sac lies between the skin and the aponeurosis of the external oblique muscle. The authors have found reports of 123 cases of this type in the literature. In interparietal hernia the sac may be monolocular or multilocular, the latter being the form present in the majority of cases. The usual clinical picture is that of intestinal obstruction. Treatment consists of early recognition and immediate relief by operation.

Digital Gangrene Following Nerve Block.—Garlock describes four cases of gangrene of the finger following digital nerve block anesthesia. After careful consideration of all the available facts, he states that the cause for this complication is undoubtedly a local one. The essential factor is a thrombosis of the digital vessels produced by the tight application of a narrow tourniquet which causes local tissue injury and marked slowing of the blood stream. An added factor may be the mechanical presence of the anesthetic agent distal to the point of constriction of the tourniquet. The prevention of complications of a similar nature rests with the care with which a tourniquet is applied about the base of a finger. A tourniquet of a narrow caliber should be avoided, and for

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ordinary purposes occlusion of the arterial supply is contraindicated. When a bloodless field is desired, a properly applied Esmarch bandage is more effective and safer.

Archives of Neurology and Psychiatry, Chicago

26: 1119-1366 (Dec.) 1931

First International Neurological Congress. B. Sachs, New York. —p. 1119.
*Cutaneous Sensory Fibers and Sensory Conduction. S. W. Ranson, Chicago.—p. 1122.
*Congenital Ectodermoses (Neurocutaneous Syndromes) in Epileptic Patients. P. I. Yakovlev and R. H. Guthrie, Palmer, Mass.—p. 1145.
*Subacute Combined Degeneration of Cord: Changes Following Liver Therapy: Histopathologic Study. C. Davison, New York.—p. 1195.
Iodobismitol in Treatment for Neurosyphilis. H. G. Mehrtens and P. S. Pouppirt, San Francisco.—p. 1220.
Effect of Removal of Stellate Ganglions on Wormwood Oil Convulsions in Cats. P. Cohen and L. Spekter, Rochester, N. Y.—p. 1226.

Cutaneous Sensory Fibers.—According to Ranson, there are good reasons for believing that pain is mediated by sensory fibers of the smallest diameter. In the spinal nerves of the cat the majority of these are unmyelinated. In the trigeminal nerve of the cat and in the spinal nerves of man a larger proportion of these fine fibers may have acquired myelin sheaths. It is the fine, nonbifurcating fibers of the trigeminal nerve that carry the sensation of pain from the skin of the face; these descend in the spinal tract of the trigeminal nerve, which is continuous below with the tract of Lissauer. These two tracts and the long column of gelatinous gray matter associated with them receive the pain fibers from the skin.

Ectodermoses in Epilepsy.—Yakovlev and Guthrie discuss three types of congenital neurocutaneous syndromes (Recklinghausen's neurofibromatosis, Bourneville's tuberous sclerosis and angiomatosis of the brain with trigeminal nevi) and present a series of fourteen case records illustrating the association of these syndromes with mental defect and epilepsy. All three syndromes exhibit remarkable parallelism in their clinical and pathologic manifestations. All three conditions are the result of congenital maldevelopment bearing electively on the organs of ectodermal derivation: nervous system, eyeball, retina and skin. The ectodermal origin of developmental anomalies in these conditions is evident from the tendency of congenital lesions to a metameric distribution in the skin and in the nervous system. However, in the case of vascular nevi the distribution of nevi seems to correspond with areas of sympathetic innervation rather than with true metameres, suggesting thus that this congenital vascular anomaly may have its origin in some developmental defect of vasomotor innervation. The relationship of these lesions to the process of folding and of differentiation of embryonal sheets and to the primitive neural tubes is suggested by topographic predilection of the clinical and pathologic manifestations of the three neurocutaneous syndromes to the cephalic and caudal ends of the body. The malformations may bear more or less exclusively on the neuroectodermal tissues, as is the case in tuberous sclerosis and in the so-called central Recklinghausen's disease, or may be confined to the mesodermal element such as blood vessels, as is the case in angiomatosis of the brain. However, the mesodermal hyperplasia (connective tissue, fibroblasts and blood vessels) is present in the characteristic lesions of all three congenital conditions, developing either as a parallel associated malformation or as a secondary reaction. All three congenital syndromes have their common origin in a malformation of the ectoblast. Both clinically and pathologically, they all may be included in one group under the term of congenital ectodermoses. The three neurocutaneous syndromes arising on a common ground of congenital ectodermal malformation are not identical. They probably differ in the period of embryogenesis at which the disturbance occurs; they differ also in the predominance of one or other of the ectodermal structures involved and, therefore, in their clinical and pathologic manifestations; they differ also in the degree of participation of mesodermal elements; thus, the mesodermal element is most prominent in the vascular neurocutaneous syndrome, with regard to which the term congenital ectodermosis of vascular type (ectodermosis telangiectodes) seems to be justified.

Liver in Degeneration of Cord.—Seventeen cases of pernicious anemia complicated by subacute combined degeneration were studied histopathologically by Davison. Seven of the patients had been subjected to liver therapy. Clinically, there was apparent improvement in the neurologic signs and symptoms in only two of the treated patients. Histopathologically, all the treated patients showed progressive glial changes (gliosis). These changes were not observed in the untreated patients with subacute combined degeneration. The myelin sheaths and axis cylinders were not influenced by the liver therapy.

Illinois Medical Journal, Chicago

60: 441-520 (Dec.) 1931

Pernicious Anemia. W. P. Armstrong, Jr., Springfield.—p. 453.
Refinements in Surgery of Tonsils Including Electrosurgery. F. B. Balmer, Chicago.—p. 458.
Heart Lesions Caused by Chest Injuries. F. M. F. Meixner, Peoria. —p. 469.
Immune Serum for Treatment of Poliomyelitis. H. A. Orvis, Winnetka. —p. 474.
Intrahepatic Gallbladder in Adult, with Review of Literature: Case. O. M. Walter and A. Neiman, Chicago.—p. 478.
Facilities for Treatment of Mental Disease and Cost of Same. C. F. Read, Elgin.—p. 480.
Diagnosis: Clinical Demonstration of Classes of Mental Diseases. R. C. Hamill, Chicago.—p. 483.
Shall Mental Disease Come Under Public Health Regulations? A. H. Kegel, Chicago.—p. 486.
Treatment of Pyelitis in Children with Bacillus Coli Bacteriophage. G. M. Cline, Bloomington.—p. 493.
Errors in Diagnosis of Hyperthyroid Disease. I. E. Bishkow, Chicago. —p. 497.
Report of Case of Recurrent Hemorrhages into Vitreous (Eales' Disease?). W. R. Fringer, Rockford.—p. 499.
Outlook for Allergic Patient. S. J. Taub, Chicago.—p. 503.
Roentgen Diagnosis of Bronchiectasis. A. Hartung, Chicago.—p. 507.
Treatment of Gastro-Enteric Intoxication in Infants. J. Zahorsky, St. Louis—p. 510.
Postoperative Management of Abdominal Operations. C. D. Brown, Chicago.—p. 513.

Iowa State Medical Society Journal, Des Moines

21: 657-714 (Dec.) 1931

Dermatologic Clinic. J. F. Auner, Des Moines.—p. 657.
Preoperative Treatment and Care. C. Ryan, Des Moines.—p. 662.
Postoperative Care. J. P. Cogley, Council Bluffs.—p. 665.
Use of Pituitrin in Incomplete Abortion. A. L. Nielson, Harlan. —p. 670.
Iodized Oil Injection in Diagnosis and Treatment of Sterility. W. L. Downing and W. W. Larsen, Le Mars.—p. 672.
Metastatic Epidural Spinal Abscesses: Four Cases. F. A. Ely, Des Moines.—p. 675.
Intravenous Pyelography. L. E. Pierson, Sioux City.—p. 676.

Johns Hopkins Hospital Bulletin, Baltimore

49: 337-391 (Dec.) 1931

Recurrent Complete Heart Block: Report of Case Associated with Transient Bundle-Branch Block and Normal Conduction Between Attacks. E. P. Carter and D. McEachern, Baltimore.—p. 337.
*Typical Position of Myocardial Scars Followfng Coronary Obstruction. W. G. MacCallum and J. S. Taylor, Baltimore.—p. 356.
Vital Staining of Rabbit Carcinoma. C. Tilghman and F. C. Lee, Baltimore.—p. 360.

Myocardial Scars Following Coronary Obstruction.—MacCallum and Taylor present three typical photographs to show the contrast between the effect of obstruction of the anterior descending branch of the left coronary artery, of its left circumflex branch and of the right coronary artery. These are the common types although both arteries may be occluded and obstruction of other and smaller branches doubtless produces characteristic scars when this is not obviated by the collateral circulation. Obstruction of the anterior descending branch of the left coronary artery commonly results in scarring of the more anterior part of the interventricular septum, sometimes even extending through to the right ventricle, and of the apical and more anterior part of the wall of the left ventricle. In sharp contrast with this, the obstruction of the right coronary artery, and especially of the more distal portion which partly encircles the base of the left ventricle and sends branches downward to its wall, produces a scar and dilatation which begins sharply in the midline of the interventricular septum and extends backward behind the papillary muscles of the mitral valve to curve round on the more posterior part of the wall of the left ventricle. Scarring of the wall of the right ventricle seems to be rare and may be due to the more direct course of the branches of this artery which supply it. Obstruction of the left circumflex branch of the left coronary artery results in a scarring and thinning of the wall of the left ventricle in

its more median portion, between the province of the left anterior descending branch and that of the right coronary. The interventricular septum is not approached. Thrombi formed in these sacculations may give rise to emboli which can pass into the branches of the aorta. If the scarring of the interventricular septum is such as to extend through to the endocardium of the right ventricle, thrombi formed there may give rise to emboli which would pass into the lung.

Kentucky Medical Journal, Bowling Green

29: 617-690 (Dec.) 1931

Routine Postpartum Care. Alice N. Pickett, Louisville.—p. 672.
Rat Bite Fever. J. A. Orr, Paris.—p. 676.
Acute Coronary Occlusion. E. F. Horine, Louisville.—p. 677.
Bladder Tumor. H. J. Farbach, Louisville.—p. 678.
Pain in Right Lower Quadrant of Abdomen. J. B. Lukins, Louisville. —p. 680.

Pennsylvania Medical Journal, Harrisburg

35: 155-222 (Dec.) 1931

Conservative Surgery of Kidney. J. D. Barney, Boston.—p. 155.
Present Status of Vitamins as Nutritional Factor in Infant Nutrition. F. T. O'Donnell, Wilkes-Barre.—p. 159.
Vitamin B Deficiency: Use in Nutritional Disorders. D. E. Berney, Scranton.—p. 161.
Relation of Irradiated Food Substances and Ergosterol Versus Cod Liver Oil in Childhood Nutrition. F. B. Jacobs, West Chester. —p. 164.
Undiagnosed Sinusitis. W. D. Chase, Bethlehem.—p. 167.
Cutaneous Diseases from Metabolic and Endocrinic Aspect. G. J. Busman, Pittsburgh.—p. 172.
Peritonitis in Children. H. T. Price, Pittsburgh.—p. 175.
Peritonitis of Tuberculous Origin. E. L. Eliason, Philadelphia.—p. 178.
*Peritonitis of Appendical Origin: Study of 1,000 Cases of Acute Appendicitis. H. L. Foss, Danville.—p. 182.

Peritonitis of Appendical Origin.—Foss calls attention to the fact that acute appendical peritonitis is causing more deaths in this country in individuals under 40 than is cancer, accounting for over 20,000 deaths each year, despite improved operative and postoperative technic and widespread propaganda for early diagnosis and treatment. About 50 per cent of the patients with peritonitis are given laxatives before admission to the hospital. The average length of time intervening between the onset of symptoms and surgical consultation is still too great. In the author's series it was four days. Immediate operation as soon as the diagnosis is made, the removal of the appendix, and ample tube drainage accurately placed constitute the essentials of treatment, while maintenance of water balance and the withholding of fluids by mouth are the chief details of postoperative care. Mortality depends largely on factors controllable prior to the patient's admission to the hospital, and of these, earlier diagnosis and omission of purgation are of particular importance. Comparative mortality statistics are of but little significance unless all the factors are considered, the chief of which is duration of time taking place between the onset of symptoms and the operation. The author believes that there is great need of further stressing the incalculable importance of early diagnosis and of making clear the simplicity, in nearly all cases, of making that diagnosis.

Public Health Reports, Washington, D. C.

46: 2973-3021 (Dec. 11) 1931

Notes on the Fumigation of Vessels: Preliminary Inspection; How Rats Escape; Increased Periods of Exposure and Other Miscellaneous Notes. C. L. Williams.—p. 2973.
Microscopic Examination for Intestinal Parasites of Seventy-Three Boys in National Training School for Boys, Washington, D. C. C. E. Baker—p. 2980.

Texas State Journal of Medicine, Fort Worth

27: 553-628 (Dec.) 1931

Clinical Neurology and the General Practitioner. T. B. Throckmorton, Des Moines.—p. 558.
Radiotherapy in Uterine Hemorrhage. R. E. Barr, Orange.—p. 565.
Auricular Flutter. E. H. Schwab, Galveston.—p. 567.
Primary Carcinoma of Lung: Case. A. E. Greer, Houston.—p. 574.
Prophylactic Use of Forceps in Labor. R. L. Grogan, Fort Worth.—p. 579.
Some Interesting Bronchial and Esophageal Foreign Body Cases. T. E. Fuller, Texarkana.—p. 585.
Ewing's Sarcoma. W. B. Carrell, Dallas.—p. 588.
Osteitis Cystica Fibrosa. J. W. Nixon, San Antonio.—p. 591.
Giant Cell Tumor. J. R. Bost, Houston.—p. 593.
Osteogenic Sarcoma. R. J. White, Fort Worth.—p. 596.
Metastatic Tumors of Bone. R. G. Giles, Temple.—p. 600.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Physical Medicine, London

6: 179-198 (Dec.) 1931

*New Theory of Mechanism of Ultraviolet Irradiation in Rheumatic Diseases. L. J. Llewellyn and A. B. Jones.—p. 181.
Physical Therapy in Cardiac Disease. J. Gutman.—p. 184.
Physical Exercises in Prevention of Pulmonary Tuberculosis. G. D. Read.—p. 186.
Irregularity of Output from Tungsten Arc. B. D. H. Watters.—p. 188.
Treatment of the Asthmatic by Physical Exercises. A. H. Douthwaite. —p. 190.
Fango Baths of Acqui. Justina Wilson.—p. 191.

Mechanism of Ultraviolet Irradiation in Rheumatic Diseases.—Llewellyn and Jones stress the fact that "rheumatism" is primarily the outcome of an inborn tendency to "instability" of the heat or temperature regulating mechanism. The storage in the skin of the amino-acids tyrosine and cystine is of fundamental and probably etiologic significance. Tyrosine is the mother substance of which the temperature-regulating hormones thyroxine and epinephrine are chemical derivatives and also of melanin through the action of the ferment tyrosinase. Tyrosine enters into the formation of insulin, another heat-producing hormone, and the sulphur content of insulin is derived from cystine. The amino-acids tyrosine and cystine exist in free state in the blood and have been detected in the sweat. The blood content of tyrosine and hence potentially of thyroxine and epinephrine is increased by ultraviolet irradiation.

British Medical Journal, London

2: 1019-1072 (Dec. 5) 1931

The Problem of the Stiff Joint. R. Jones.—p. 1019.
*"Avertin" in Gynecology: Record of 1,000 Cases. J. Young.—p. 1026.
Some Sialograms. L. N. Pyrah and P. R. Allison.—p. 1028.
Perforative Diverticulitis of Colon. S. N. Sennett.—p. 1031.
A Calculus in an Ectopic Kidney. J. L. Davies.—p. 1031.
Encysted Empyema. N. D. Patel.—p. 1032.

"Avertin" in Gynecology.—Young believes that, employed in a dosage which does not exceed 0.1 Gm. per kilogram of body weight, "avertin" is a safe drug. In this dosage it may suffice for minor operative work, but a supplementary inhalation anesthesia is usually required. Its advantages are: (1) ease, comfort and certainty of induction; (2) reduction of postoperative discomfort and sickness, and (3) reduction of postoperative pulmonary complications. In the author's series of 1,000 unselected cases there were no deleterious effects, either immediate or remote. There were five deaths in the series, and in no instance could the fatal issue be attributed to the "avertin."

Glasgow Medical Journal

35: 321-371 (Dec.) 1931

The Etiologic Factor of Injury in Disease. J. Patrick.—p. 321.
*Treatment of Pernicious Anemia by Injections of Liver Extract. A. W. Harrington and J. Fleming.—p. 345.

Treatment of Pernicious Anemia by Injections of Liver Extract.—Harrington and Fleming report the results they obtained with the intravenous and intramuscular administration of a liver extract in four cases of pernicious anemia. This form of treatment produces a rapid and effective reticulocytosis in from three to four days. In one case it caused a sharp reaction, which, however, was in no way alarming. The authors believe that the intravenous administration of liver extract should be reserved for severe cases and may obviate blood transfusion. Ordinarily the extract should be given intramuscularly. The injections should be discontinued as soon as effective reticulocytosis has occurred, and treatment continued orally.

Kenya and East African Medical Journal, Nairobi

8: 179-210 (Oct.) 1931

Some Remarks on Laboratory Medicine, with Especial Reference to Certain Common Investigations. R. S. F. Hennessey.—p. 200.

8: 211-238 (Nov.) 1931

Modern Treatment of Syphilis: Its Communal and Individual Aspects. J. H. Sequeira.—p. 212.
Etiology of Postvaccinal Encephalitis. P. A. Clearkin.—p. 224.
Incubation Period of Sleeping Sickness Illustrated by Two Cases of Trypanosomiasis Among Europeans. N. McLean.—p. 235.

Lancet, London

2: 1223-1278 (Dec. 5) 1931

Infant Mortality of Birth. T. W. Eden.—p. 1223.
*Hepatic Efficiency. H. Rolleston.—p. 1227.
Tests of Hepatic Function. E. C. Dodds.—p. 1228.
*Vitamin D, Deficiency, Dental Caries and Tonsillar Enlargement: Clinical Investigation of Some Late Effects of Rickets. Helen M. M. Mackay, with the Collaboration of S. F. Rose.—p. 1230.
*Blood Platelets After Splenectomy. J. F. Galloway.—p. 1235.

Hepatic Efficiency.—Rolleston believes that it is in acute rather than in chronic lesions of the liver that functional tests are likely to give constant evidence of impaired activity. In acute yellow atrophy, in which all or nearly all the parenchyma of the liver and presumably its functions are involved, the clinical picture usually gives sufficient data for the diagnosis, and the need for further tests may not be obvious. In the treatment of syphilis by arsphenamine preparations, evidence of impaired function in the excretion of bile—the presence of bile acids in the urine by Hay's test, and so-called latent jaundice by van den Bergh's test—is valuable by giving a warning that changes are taking place in the liver and so indicating cessation of the injections and the administration of dextrose, in order to avoid the more severe accidents of postarsphenamine jaundice. The methods have the advantage of simplicity and rapidity over the levulose test in routine work. In chronic ascites due to causes other than hepatic disease, such as tuberculous peritonitis and carcinomatosis of the peritoneum, negative results with functional tests, such as rose bengal, may be of use in diagnosis. The value of van den Bergh's test in connection with different forms of jaundice may be regarded as established. It is in ordinary portal cirrhosis that, in spite of many reports to the contrary, functional tests so often fail, especially when their help is most needed. The levulose and galactose tests have been much employed, but the compensatory power of the liver may vitiate the results, especially in latent cases. Urobilinuria, common in cases of structural change and functional disorders of the liver, provided bile enters the intestine, is not pathognomonic of any one disease of the liver and may occur when blood destruction is taking place in any part of the body.

Vitamin D Deficiency, Dental Caries and Tonsillar Enlargement.—The investigation of Mackay and Rose was confined to the effect, if any, on the teeth and tonsils of school children of vitamin D deficiency in infancy or early childhood. Forty-six children aged from 6 to 10 years, who were known to have had rickets in infancy or early childhood, were compared with forty control children of similar age. The authors have no knowledge that the diet of the two groups of children differed materially when early childhood was passed. Hence they do not claim that their control group consisted of children who had always had sufficient vitamin D, but only that in early childhood the available vitamin D for members of this group was much greater than for members of the rachitic group. Moreover, this difference was sufficiently marked to leave an effect at school age on the height, weight and bones of children of the rachitic group. These averaged 2½ inches shorter and more than half a pound lighter than the controls; moreover, one in four still showed deformities of the long bones, and one in five well marked chest deformities. The proportion of children with crowding of the permanent teeth was nearly the same in the two groups, but as most of them had only cut a small proportion of their permanent teeth, not much stress can be laid on this. Hypoplasia of the permanent teeth was almost confined to the rachitic group, 22 per cent of whom showed hypoplasia, which in 15 per cent was fairly severe. Since only one control case presented hypoplasia, and that slight, these results in children fall into line with the evidence that D deficiency in young animals produces defective dental structure. In spite of the very different incidence in the two groups of hypoplasia of the permanent teeth, the amount of caries of the permanent teeth appeared only slightly greater in the rachitic group than among the controls, and the difference is such that it cannot be held to indicate that vitamin D deficiency in early childhood is an important factor in determining the development of caries. The amount of caries of the temporary teeth was about the same in the rachitic and the control groups. Nor does D deficiency in early childhood appear to have influenced materially the tendency to the development of enlarged tonsils or of enlarged cervical lymph nodes. The two groups were roughly similar in these respects, both showing the usual high incidence of tonsillar enlargement and cervical adenitis seen in children attending a hospital outpatient department. The authors suggest that the very similar incidence of dental caries shown in those children who had had rickets and in the controls strongly suggests, if it does not prove, that vitamin D deficiency in infancy and early childhood, with consequent hypoplasia of the permanent teeth, is not the main factor in determining the incidence of dental caries. Such a deficiency may be one among a variety of etiologic factors, but if it were the predominant causative factor, the incidence of caries in the rachitic group should have been far greater than among the controls.

Blood Platelets After Splenectomy.—Galloway reports that removal of the spleen in three cases of thrombocytopenia led to an immediate and great increase in the number of circulating blood platelets. In the recorded cases they reached their maximum on the eleventh day. Subsequently they diminished in number but still remained much above the preoperative level even after twelve months and twenty-one months. More platelets reach the spleen in the splenic artery than leave it in the splenic vein. There is a great accumulation of platelets in the blood in the substance of the spleen. The observations suggest that the spleen is an important site for platelet destruction.

Medical Journal of Australia, Sydney

2: 635-666 (Nov. 21) 1931

Acute Appendicitis: Its Early Diagnosis. A. E. Lee.—p. 635.
*Achlorhydric Dyspepsia. J. M. Andrew.—p. 644.
"Pernocton" in Obstetrics. R. F. Matters.—p. 650.
An Occasional Cause of Trigeminal Neuralgia. H. S. Stacy.—p. 652.

Achlorhydric Dyspepsia.—Andrew states that there are many cases of dyspepsia, often overlooked, in which the test meal reveals diminution or absence of free hydrochloric acid in the gastric juice. The therapeutic test of administration of acid is of value in those cases which do not give an early and maintained response to alkali treatment when organic and reflex causes for the dyspepsia have been excluded. A confirmatory test meal, at least by the qualitative method, is useful as a guide to treatment. It is important to recognize the relation of achlorhydria to the preanemic state and the early spinal cord changes of addisonian anemia.

Practitioner, London

127: 605-704 (Dec.) 1931

*Scope and Limitations of Endocrine Therapy. S. Vincent.—p. 605.
Recent Observations on Pituitary Body. W. L. Brown.—p. 614.
Thyroid Extract as Therapeutic Agent: Some Indications, Results and Difficulties of Treatment. H. G. Hill.—p. 626.
Plea for Earlier Recognition of Thyroid Deficiency. H. C. Barlow.—p. 648.
Septic Meningitis. E. Watson-Williams.—p. 659.
Psychogenic Aspect of Dermatology. Mary Horan.—p. 675.
An Easy Way to Take Raw Liver. D. G. Falconer.—p. 686.
An Etiologic Classification of Anemias. R. E. Horsfall.—p. 689.
Postural Nasal Obstruction. E. R. G. Passe.—p. 692.

Endocrine Therapy.—Vincent summarizes the scope and limitations of endocrine therapy thus: The cases in which it is possible to employ a true endocrine therapy—artificially to take the place of the internal secretion of a gland—are those of the thyroid, parathyroid, pancreas (insulin) ovary, suprarenal cortex, suprarenal medulla, and the two parts of the pituitary. Of these, only one, the thyroid, is known to produce any effects when given by the mouth. The others must be administered by some other route. Epinephrine and preparations of posterior pituitary are chiefly used as drugs apart altogether from the question of internal secretion and substitution therapy. The anterior lobe of the pituitary, though it produces marked effects on growth when injected into animals, has not yet been demonstrated to be of service in the treatment of disease in the human subject.

Japanese Journal of Experimental Medicine, Tokyo

9: 403-507 (Oct. 20) 1931

Researches in Leprosy Published in Japan from 1890 to 1928. M. Nagayo.—p. 403.
Researches in Leprosy Published in Japan During 1929-1930. T. Tamiya.—p. 483.

Bull. et Mém. de la Soc. Méd. des Hôpitaux de Paris

47: 1536-1592 (Nov. 2) 1931

*Bronchoscopic Diagnosis of Bronchopulmonary Cancer. A. Soulas.—p. 1536.
Jaundice Caused by Phenylquinoline Carboxylic Acid. E. Chabrol, A. Busson and J. Mennecier.—p. 1541.
Severe Jaundice with Acute Yellow Atrophy of Liver. E. Chabrol and A. Busson.—p. 1568.
Blood Urea and Chloremia in Diabetes. F. Rathery, J. Sigwald and M. Dérot.—p. 1573.
Hypoglycemia in Subarachnoid Meningeal Hemorrhage. F. Rathery, M. Dérot and J. Sterne.—p. 1578.
Pyelonephritis Caused by Friedländer's Pneumobacillus. Mme. Bertrand-Fontaine and R. Parlier.—p. 1582.
Tuberculous Polyarthritis Causing Hallux Valgus and Coxitis: Case. Mathieu-Pierre Weil, J. Delarue and V. Oumanski.—p. 1585.
Roentgen Images of Azygos Lobe and Fissure. R. Debré and M. Mignon.—p. 1591.

Bronchoscopic Diagnosis of Bronchopulmonary Cancer.—Soulas asserts that in spite of the important acquisitions in roentgen diagnosis and classification of pulmonary cancer, recent publications still demonstrate the difficulty in such diagnosis. The diagnosis is rarely determined at the beginning but generally at the time when aggravation of symptoms or metastases have appeared. He reviews two instances in which bronchoscopy confirmed the clinical examination by reason of the endoscopic information and the biopsy; in four other instances the diagnosis was very difficult, but bronchoscopy without biopsy enabled him to make an exact diagnosis on the basis of the endoscopic signs alone. In four other instances endobronchial examination did not indicate the existence of a bronchopulmonary cancer but, on the contrary, signs of syphilitic stenosis, compression without bronchial participation, and suppuration. The author believes that bronchoscopy should not replace roentgen and clinical examinations but should follow and complete them. However, its function is primarily to confirm or establish an early diagnosis of bronchopulmonary cancer. Bronchoscopic diagnosis depends on a number of characteristic signs. It is not necessary to insist on well known clinical signs in budding, vegetating cauliflower-like bronchial tumors when it is easy to obtain histologic confirmation by biopsy. The endobronchial picture peculiar to cancer is characterized by deep red coloration, more or less stenosing infiltration of the mucosa, a shagreen aspect, an unusually hemorrhagic condition, anomalies in direction and form of the bronchi, stenosis of the orifices, stenosis of an endoparietal origin not due to compression, and especially the diminution or still more the abolition of the physiologic movements of the bronchi, which may progress to the point where the bronchus moves as a whole. This absence of expiratory contraction and inspiratory expansion and this abolition of peristaltic movements of the air passages are pathognomonic.

Journal d'Urologie, Médicale et Chirurgicale, Paris

32: 297-392 (Oct.) 1931

*Diagnosis of Cystic Degeneration of Kidneys. J. A. Ratner and I. L. Zimhes.—p. 297.
*Formation of Calculi in Gonorrheal Pyelitis, with Case Report. I. Mihalovici.—p. 305.
Histopathologic Study of Neck of Bladder. M. Jungano.—p. 314.

Diagnosis of Cystic Degeneration of Kidneys.—Ratner and Zimhes state that cystic degeneration of the kidneys is a congenital defect difficult to diagnose because of its lack of specific symptoms, the evidence of a granular tumor in the lumbar region being the only objective symptom. One of the most frequent signs is polyuria, followed by oliguria as the condition gets worse and ending with anuria. The urine is of very low specific gravity and contains albumin. Early diagnosis is extremely rare, and the decisive points of the diagnosis are the finding of a unilateral or a bilateral tumor in the lumbar region and evidence of chronic nephritis. For several years the authors have made special roentgenographic studies of these cases and have found a characteristic general enlargement of the renal pelvis, frequently identical on the two sides. They consider roentgenograms as indispensable for the diagnosis when a patient presents evidence of chronic nephritis with the finding of the characteristic bilateral tumor, scarcely or not at all painful, granular, often mobile on palpation and moving with respiration. In case the tumor is unilateral the differential diagnosis will have to be made between a number of lesions according to whether inflammatory complications accompany the picture or not. In uncomplicated cases it will be necessary to eliminate first the neoplasms, especially when hematuria coexists, then the solitary cysts of the kidneys, the parasitic cysts, and hydronephrosis. Complicated cases with infections present the picture of acute pyelonephritis and perinephritis in which only an operation will reveal the anomaly, while a low grade infection with unilateral tumor will raise the suspicion of tuberculosis, calculus, and so on. In this case a bilateral roentgenogram will help to establish the diagnosis. The authors warn of the dangers in taking the roentgenograms, do not attach much importance to the method of introducing air in the perirenal tissues as a diagnostic aid, and mention the studies they are making on the injection of colored solutions in the veins in order to obtain a contrast picture.

Formation of Calculi in Gonorrheal Pyelitis.—Mihalovici states that the formation of calculi due to ascending infections is undoubted nowadays, and he reviews the principal factors for their production in acid urine: (1) the presence of a foreign body to serve as a nucleus for the precipitation of colloids; (2) the loss of crystallization form under the influence of colloids, called spheroidal formation of the crystals, as demonstrated by Keyser of the Mayo Clinic; (3) infection, which effects the same changes in crystals as obtains in number 2, again demonstrated by Keyser, using diluted cultures of Bacillus coli, and (4) retention of urine. The author gives the history of a patient with ascending gonorrheal pyelitis who expelled a calculus formed in the left ureter. Roentgenograms show that this ureter was constricted below the fourth lumbar vertebra and a ureteral catheter was stopped at 16 cm., corroborating the roentgenogram.

Paris Médical

2: 369-400 (Nov. 7) 1931

Diseases of Children in 1931. P. Lereboullet and F. Saint Girons.—p. 369.
Mortality in First Ten Days of Life: Reduction. A. Couvelaire, P. Lereboullet and Lacomme.—p. 384.
Present Concept of Acrodynia. M. Péhu and H. Jarricot.—p. 390.
*Meynet Rheumatismal Nodule. R. Debré and P. Uhry.—p. 394.
*Phlyctenular Keratoconjunctivitis in Children. P. Woringer.—p. 398.

Meynet Rheumatismal Nodule.—Debré and Uhry assert that nodose rheumatism is rare in France in contradistinction to its incidence in Anglo-Saxon and Germanic countries. The nodules of Meynet are found in the subcutaneous cellular tissue and do not adhere to the skin, which retains a normal aspect. They are often revealed by simple inspection as prominences, but most often the nodules are not visible and are then recognized by palpation as small, round, spherical or oval, sometimes discoid, tumors of variable consistency; they are not usually soft but firm, and give the sensation of dense fibrous or even cartilaginous or bone tissue. Their size varies from that of a small grain to that of a large nut; sometimes they simulate tumors or, on the contrary, pass unnoticed until necropsy. In most cases they are very numerous. Their localization is variable with predilection for the top of the skull, particularly the occipital and parietal part, along the vertebral apophyses and the level of the scapula, and in the joints (knees, elbows, fingers). The authors advise that in examining a patient with Bouillaud's disease or chorea, clinicians should not neglect to pass the hand over the vertebral column and the occipitoparietal and scapular regions, in the search for Meynet's nodules to complete and confirm the diagnosis of the disease. These nodosities, usually free under the skin, may be attached to the tendons or even adhere to the subjacent bone. The development of the nodules may be brief (from three to four days), but generally it requires from three to four weeks. The two forms can coexist or follow each other and altogether the entire development does not exceed three to four months. Certain small periarticular syphilitic tumors in their early development resemble Meynet's nodules; however, their more frequent occurrence in adults and their evolution toward softening help in the differentiation. When the nodules adhere to the bone, one should eliminate the possibility of gumma, syphilitic periostitis or tuberculosis of the bone. The rheumatismal nodules present in the occipital region are hard to distinguish from enlarged lymph nodes, which are so frequent in this region in children. The authors believe that there is no connection

between the subcutaneous rheumatismal nodules of Meynet and the cutaneous erythematous and painful nodules of endocarditis lenta. The nodules of Meynet are characteristic of acute articular rheumatism, acute rheumatismal polyarthritis or the disease of Bouillaud either when it accompanies a typical polyarthritic crisis or as it occurs in the course of an abortive form of disease. The appearance of Meynet's nodules has a great importance for prognosis, since it indicates that the child has a grave form of rheumatism with severe cardiac localization. One worker reports that among twenty-seven cases of nodose rheumatism there were twenty-six presenting cardiac lesions, while another reports eight cases with cardiac complications in all. The authors believe that Aschoff's nodule is the specific lesion of Bouillaud's disease; that the histologic formation of Aschoff's nodule represents the primary lesion, primordial to the nodule of Meynet; that Aschoff's nodule is a "rheumatismal follicle" and that the nodule of Meynet is a "rheumatismal nodule." The authors find that their bacteriologic examinations were negative, but pathology designates a singular relationship, hard to define, between endocarditis lenta determined by Streptococcus viridans and the disease of Bouillaud. There is a morbid family, dominated by the disease of Bouillaud, which includes rheumatismal chorea, the disease of Still-Chauffard, certain chronic fibrous rheumatisms of infancy and also, in a measure, endocarditis lenta.

Phlyctenular Keratoconjunctivitis in Children.—Woringer asserts that phlyctenular keratoconjunctivitis is of great interest in pediatrics since it is recognized that it has a relationship to tuberculous infection and is often an indication of latent tuberculosis. This entity has for a long time been considered as one of the essential characters of a scrofulous syndrome running parallel to cervical adenitis and chronic rhinitis. It is less frequently encountered in children's clinics than in the services of ophthalmologists. The author found that 85 per cent of the children with phlyctenular keratoconjunctivitis had a positive cutireaction, which usually indicates scrofula; in 15 per cent a relation to tuberculous infection was not demonstrated. In more than two thirds of the cases of keratoconjunctivitis with a recently positive cutireaction, roentgenography showed developing hilus lesions. In children with hilus lesions the mortality is not higher. Keratoconjunctivitis seems to have a favorable influence on the development of tuberculous infection. In old patients who have had a phlyctenular keratoconjunctival infection from two to six years previously, roentgenography demonstrates cicatrices and regions of calcification that are opaque to roentgen rays and denote a good recovery of the bacillary lesions.

Presse Médicale, Paris

39: 1573-1588 (Oct. 28) 1931

*Circulatory Anisergy. M. Villaret, L. Justin-Besançon and R. Cachera. —p. 1573.

Circulatory Anisergy.—Villaret and his associates deplore the fact that clinical studies of the circulatory system have been limited mostly to examination of the heart and the arterial tension when the different circulatory sectors present a relative autonomy that allows the regional and simultaneous establishment of very different degrees of arterial as well as venous pressure, to which they apply the name circulatory anisergy. They divide anisergies into arterial, venous and global. In arterial anisergies they measure simultaneously the recurrent arterial pressure of the extremities and the general arterial pressure, the recurrent arterial pressure being obtained by introducing a cannula in the distal end of an artery and thus registering the pressure maintained by the anastomoses. The pressures are interpreted relatively to those of the general pressure. Several tracings are given of disassociated pressures produced by the administration of suitable drugs, such as ergotamine tartrate to obtain intense peripheral vasoconstriction, α-methylacetylcholine to obtain peripheral vasodilatation, epinephrine after exhibition of yohimbine to obtain with perfect symmetry two opposing effects in two distinct regions, and choline derivatives to obtain dilatation of the retinal artery independent of depressive action on the arterial pressure. Consequently, hypertension or hypotension and dilatation of the retinal artery can be easily disassociated. The authors pass lightly over anisergies of the venous system and refer the reader to their recent book on this subject. They mention that in global anisergies there is, under certain conditions, a complete lack of total coordination between the variants of arterial and venous pressures. They conclude by giving examples of various anisergies and by stating that taking the pressure of a large artery is insufficient to afford adequate information on the general condition of the circulation.

Policlinico, Rome

38: 597-648 (Dec. 1) 1931. Medical Section

*Prophylactic Value of Diphtheria Toxoid. T. Pontano.—p. 597.
Familial Eosinophilia. M. Dalla Palma.—p. 605.
Menstrual Function in Exophthalmic Goiter. G. Meldolesi.—p. 620.
Influence of Sleep on Changes in Acid-Base Equilibrium in Kidney Patients. M. Pisa.—p. 638.

Prophylactic Value of Diphtheria Toxoid. — Pontano criticizes the means of control used for antidiphtheria vaccination in man with the Ramon toxoid. The author took up the study of the problem in an experimental manner and controlled the action of the toxoid vaccine in an infection of the guinea-pig obtained by means of a virulent diphtheria bacterium. He found that the toxoid is harmless even in large doses and always exerts an antitoxic vaccinating potency but that in order to obtain in the guinea-pig a truly vaccinating effect it is necessary to resort to enormous doses of toxoid. A single dose of 5 cc., although enormous with respect to the body weight of the animal, may attain a vaccinating effect. The vaccination in the experiment was only antitoxic. The author, who thinks that the greater danger from ordinary diphtheria lies in the seat of the disease (larynx) rather than in the toxemia, concludes that the animal experimentation does not justify the expectation that diphtheria will disappear or explain the disappearance of cases that, owing to the nature of the seat, are grave, but that it does justify the hope that grave toxemias will disappear if the doses of toxoid are notably increased at vaccination.

Riforma Medica, Naples

47: 1771-1808 (Nov. 23) 1931

Teletransmission of Cardiac and Pulmonary Sounds: Pende's Cardiopulmonary Teletransmitter. G. Santucci.—p. 1771.
Special Pathogenic Character of Colon Bacillus Isolated from Human Feces and Cultivated in Special Mediums. M. Sorrentino.—p. 1774.
*Prognostic Value of Oculocardiac Reflex in Tuberculosis. C. Scotti.—p. 1777.

Oculocardiac Reflex in Tuberculosis.—Scotti concludes from his researches on patients that the oculocardiac reflex is frequently absent in patients gravely ill and that such absence not only points to tuberculous toxemia but indicates nearly always an unfavorable prognosis.

Archivos de Medicina, Cirugía y Espec., Madrid

34: 1157-1176 (Dec. 19) 1931

*Intestinal Tuberculosis. H. G. Mogena.—p. 1157.
Studies on Bronchial Asthma: Observations on Pollen in Air of Madrid. C. Jiménez Diaz, B. Sánchez Cuenca and G. Canto.—p. 1163.

Intestinal Tuberculosis. — Mogena first recapitulates the gastro-intestinal disturbances likely to occur in tuberculous patients but not due to local tuberculous lesions and consequently of a more benign prognosis, such as dyspepsia with ptosis of the stomach and intestine in patients who have lost considerable weight and in women after pregnancy; dyspepsia produced by forced feeding; diarrhea resulting from achylia with its natural train of symptoms, from tuberculous toxemia and from deglutition of sputum. Intestinal tuberculosis is primary in from 5 to 10 per cent of the cases, especially in children, and secondary, as a rule, to pulmonary tuberculosis; infection occurs by deglutition of sputum and through the circulatory and lymphatic routes. Its site of election is the ileocecal region, where it attacks the solitary and the aggregated lymph nodules and surrounding tissue. The initial symptoms consist of slight gastro-intestinal disturbances, nausea, constipation or diarrhea, anorexia, vague pains in the abdomen and so on. The later constant symptom is diarrhea, up to the point of dehydrating the patient, abdominal pain in the right lower quadrant and borborygmus, all due to increased peristalsis and lack of absorption of ingested liquids. Alternations of constipation and diarrhea have great diagnostic value. Tem-

perature changes are unreliable; loss of weight is rapid in cases in which diarrhea persists. The possible complications are hemorrhage, perforation and cicatricial stenosis. Hemorrhage is rare because the slow development of the ulcerations gives time for obliterating endarteritis or thrombosis to plug up the vessels. Perforation is more frequent and results in a localized peritonitis with adhesions or an abscess, with their individual symptoms. Stenosis may be slight and without perceptible symptoms but in rare cases may lead to intestinal obstruction. Tuberculoma may be present, especially in patients aged from 20 to 40 years, and although often difficult to diagnose, it will be recognized by its insidious beginning with more continuous painful sensations in the right iliac fossa; alternations of constipation with diarrhea; loss of weight and appetite; nocturnal pains, and the presence of a tumor, hard, irregular, painful on palpation, and mobile, which later may produce intestinal obstruction. The lower part of the colon and the rectum may be the seat of a chronic tuberculous hypertrophy, which can be recognized by digital examination and rectoscopy. The possibility of extension of the lesions to the peritoneum and the female genital organs is to be remembered. The diagnosis rests on the study of the symptoms mentioned and the finding of occult blood and soluble albumin. The discovery of the tubercle bacillus has little value in proving localization. Roentgenographic studies are valuable and should be made with the greatest care, the barium meal being followed up every hour from the time it leaves the stomach. The prognosis depends on the time factor and the extension of the lesion, the prognosis of the pulmonary lesion, and the general and social conditions of the patient so far as they will allow him to follow the necessary treatment. Treatment consists of the general treatment for tuberculosis with reliance on administration of vitamin C and D. Surgical treatment by excision or anastomosis is recommended in early cases when the general condition of the patient allows it.

Deutsche Zeitschrift für Chirurgie, Berlin

233: 545-656 (Nov. 24) 1931

Progress in Thoracic Surgery. R. Nissen.—p. 545.
Function of Resected Stomach. F. Spath.—p. 563.
Relations Between Resection of Gastric Cancer and Function of Liver. K. Taniguchi and T. Kuzuhara.—p. 577.
*Etiology of Pneumococcal Peritonitis in Children. W. Obadalek.—p. 587.
Local Anesthesia with 0.5 Per Cent Procaine Hydrochloride-Epinephrine Solution and Fatal Tissue Injury. Gebele.—p. 618.
Treatment and Prophylaxis of Postoperative Thrombosis and Thrombophlebitis with Elastic Compression Bandages. H. R. Paas.—p. 623.
Bacteriologic Aspects of Cholelithiasis and Histologic Changes of Liver During Same. C. Murayama.—p. 634.
Therapy of Acute Hematogenic Osteomyelitis. F. Spath.—p. 641.
Roentgen Diagnosis of Deep Lipoma. J. Reiss.—p. 648.
Paramedian Extraperitoneal Exposure of Lumbar and Sacral Sympathicus. W. Rieder.—p. 654.

Etiology of Pneumococcal Peritonitis in Children.—Obadalek points out that, whereas the older authorities assume an enterogenic etiology of pneumococcal peritonitis in children, in the French literature a hematogenic infection of the peritoneum is most widely accepted, and more recent studies, which revealed that girls were mostly affected and that they frequently also had a vulvitis, made an ascending infection from the vagina appear possible. However, the disease appeared also in boys, and it was thought that in them it originated in the appendix. The author is of the opinion that peritonitis in children is usually caused by invasion from the intestine. In order to corroborate his theory, he tested in animal experiments the feces of children with peritonitis. He reports the clinical histories of thirteen children with pneumococcal and of two with streptococcal peritonitis. In all of them the feces were examined for the presence of virulent micro-organisms by injection into guinea-pigs. Control tests were made in peritonitis cases caused by perforation of the appendix. Nearly all the guinea-pigs that were injected with the feces of children with pneumococcal peritonitis died, and those injected with the feces of the patients with streptococcal peritonitis died too. Necropsy of the animals revealed a diffuse peritonitis, and the pus yielded the same micro-organisms as the peritoneal exudate of the children. However, the guinea-pigs on which the control tests were made survived the injection of feces. From these observations the author concludes that in children the pneumococcal peritonitis and peritonitis of other bacteriologic origin are due to passage through the wall of the intestine. The clinical aspects of the disease likewise speak for the enterogenic etiology, for diarrhea is nearly always present, and in fulminant cases with early intestinal paralysis there exists in the beginning only tenesmus. The vulvitis is a secondary manifestation; it results from a fecal infection of the external genitalia. Pneumococcal peritonitis originating in the female genitalia is extremely rare.

Monatsschrift für Kinderheilkunde, Berlin

51: 241-320 (Nov. 24) 1931

Welfare Work for Juveniles. A. Keller.—p. 241.
Studies on Difference in Diphtheria Susceptibility in Children of Various Blood Groups. H. Nowak.—p. 257.
*Peculiarity of Human Milk: Investigations on Diastase. H. Schlack and W. Scharfnagel.—p. 273.
Significance of Constitution for Pathogenesis of Lymphatic Leukemia. Valerie Deutsch.—p. 280.
Sexuality During Childhood. K. Ochsenius.—p. 292.
Treatment of Congenital Torticollis According to S. Rosenbaum. K. Kundratitz.—p. 299.

Peculiarity of Human Milk: Investigations on Diastase.—Schlack and Scharfnagel found that if a small amount of raw human milk is added to a starch paste the latter becomes liquefied within a few minutes. This property of human milk to liquefy starch paste is destroyed by boiling. In testing cow's milk and milk from various other animals the authors found that these do not have the liquefying power; except in the colostrum from cows and in mare's milk it is present in rare instances. This liquefying property of human milk is due to its high diastase content. Milk from animals likewise contains this ferment but in much smaller quantities. The author points out that the liquefaction test is a simple method to differentiate between animal milk and human milk. The high diastase content of human milk is of significance for the nutrition of nurslings for the reason that the diastase content of the saliva is very small during the first weeks of life.

Münchener medizinische Wochenschrift, Munich

78: 2067-2106 (Dec. 4) 1931

Evaluation of Digitalis Preparations. B. Behrens, O. Gros and F. Hildebrandt.—p. 2067.
Estimation of Elasticity of Arteries from Blood Pressure Amplitude and from Beat Volume of Heart. E. Gabbe.—p. 2069.
*Treatment of Paroxysmal Tachycardia. M. Hochrein.—p. 2070.
*Prevention and Treatment of Pyogenic and Putrid Infection of Accidental Wounds. P. Clairmont and P. Meyer.—p. 2073.
Clinical Aspects of Neuroparathyrogenic Disorders. R. Schmidt.—p. 2075.
Apoplexia Uteri. S. Heilbronn.—p. 2077.
Remarks on Treatment of Lobar Pneumonia. F. O. Hess.—p. 2078.
Adenomyoma and Adenomyosis. E. Vogt.—p. 2080.
New Method of Palpation of Hypochondria. B. Laqueur.—p. 2083.
Prophylaxis and Treatment of Goiter with Fats and Proteins Containing Iodine. W. Fischer.—p. 2084.
Efficacy of Suggestion in Certain Forms of Hemorrhagic Diathesis and of Hemorrhages. G. Wiele.—p. 2084.

Treatment of Paroxysmal Tachycardia.—Hochrein reports experiences with a prophylactic treatment of uncomplicated paroxysmal tachycardia. In patients in whom the attacks could not be counteracted by the usual therapeutic methods (quinine, quinidine, strophanthin, and the like), it was possible to prevent the attacks by a combination of dietetic measures, psychotherapy and, especially, the administration of atropine. The method of treatment and the reaction of the patients are illustrated in two case reports. During a two year observation the efficacy persisted not only during the administration of atropine but also after it had been discontinued. The action mechanism of atropine on the cardiac function during paroxysmal tachycardia is briefly discussed.

Treatment of Infection of Accidental Wounds.—Clairmont and Meyer state that the infection of accidental wounds is often progressive, may necessitate incision and amputation, or may lead to putrid general infection and even end fatally. The mortality rate of the 2,476 cases of accidental injuries that were treated at the surgical clinic in Zurich during the years from 1920 to 1929 was 1.6 per cent. The most effective means to prevent wound infection is to take proper care of wounds as soon as possible. Superficial scratches, cuts, abrasions and tears should be given the same careful attention as deeper wounds, for the authors noted that pyogenic and putrid general infection and tetanus often resulted from these because

of lack of proper care. A 5 per cent alcoholic solution of iodine was found to be most effective in the disinfection of wounds. If wounds require débridement it should be done according to Friedrich's method, with subsequent iodinization. But in spite of careful tending of a wound, infection may develop, and for this reason careful wound control and after-treatment are necessary. Whether an amputation is to be resorted to is largely dependent on the attitude of the individual physician. In gas gangrene the decision can usually be made sooner than in pyogenic general infection, in which the bacteriologic aspect is less alarming. If tetanus develops there is always the possibility of influencing the entire organism. The prophylactic application of tetanus serum and occasionally of gas gangrene serum is necessary especially in clinical institutions. However, a certain selectivity seems justified. It is often possible during the first aid treatment to recognize wounds that are predisposed to tetanus or gas gangrene. The authors think that omission of prophylactic serum injection cannot be considered malpractice.

Zeitschrift für Tuberkulose, Leipzig

63: 1-80 (Dec.) 1931

Clinical Experiences in Treatment of Apical Tuberculous Processes by Means of Apicolysis According to Lauwers. H. Bremer and P. Uhlenbruck.—p. 1.
Tissue Plombierung of Cavern Perforating Thoracic Wall. R. Nissen.—p. 20.
*Open Tuberculosis in Young Teachers a Menace to School Children. F. Klein.—p. 22.
Results of Crusade Against Tuberculosis. H. Matthies.—p. 32.
Clinical Observations During Administration of Spleen to Patients with Pulmonary Tuberculosis. R. Birstein and M. Ikonen.—p. 38.

Open Tuberculosis in Young Teachers a Menace to School Children.—Klein gives a detailed report of several class infections, which could be traced to teachers with open tuberculosis. All school children who had been exposed were subjected to clinical, roentgenologic and some also to serologic examinations. Positive tuberculin reactions were observed in from 72 to 73.5 per cent of the children and active pulmonary processes in from 14.7 to 26.9 per cent; among the latter there were from 5.9 to 15.8 per cent of fresh pulmonary infiltrations. The author stresses the necessity of health examinations for teachers and for the students in pedagogic institutes.

Zentralblatt für Chirurgie, Leipzig

58: 3121-3184 (Dec. 12) 1931

Treatment of Fractures. K. Mermingas.—p. 3122.
Lateral Abdominal Hematoma with Late Perforation into Intestine. E. Sehrt.—p. 3131.
Homogeneous Enostosis. F. Krauss.—p. 3132.
*Prevention of Recurrence After Hernia Operations. A. Adler.—p. 3136.
*Late Results of Cardiac Suture. I. G. Rufanov.—p. 3138.
Translocation of Tendons. H. von Baeyer.—p. 3140.
*New Method of Regional Anesthesia: Peridural Segmental Anesthesia. A. M. Dogliotti.—p. 3141.
Operative Treatment of Nonresectable Duodenal Ulcer. H. von Haberer.—p. 3145.
Lymphadenoid Polypi of Rectum. G. E. Konjetzny.—p. 3154.
Treatment of Incompletely Descended Testis. R. Göbell.—p. 3155.

Prevention of Recurrence After Hernia Operations.—Bassini's method is, according to Adler, the most widely employed operation in the treatment of inguinal hernia. However, Bassini's original method as well as its modifications are followed by recurrence in from 4 to 5 per cent of the cases. To prevent recurrences the author perfected a new plastic procedure which provides reinforcement for the Bassini sutures. He gives a detailed description of the technic, with illustrations of the various stages, and asserts that he employed it in a considerable number of cases. He considers it advisable, especially in large hernias, in recurrent hernias, in older persons and in patients with inferior connective tissue.

Late Results of Cardiac Suture.—Rufanov reports the clinical history of a man, aged 44. Examination revealed a scar in the region of the heart, through which the cardiac movements could be observed. A scar in the back indicated a previous resection of a rib, and the anamnesis revealed that twenty-eight years before the patient had suffered an injury of the heart, which necessitated cardiac suturing. The author describes this case not only because reports on the late results of cardiac suture are extremely rare but especially because the cardiac function is not impaired and the patient is free from pain, in spite of the fact that the pericardium was drained, which must have resulted in adhesions.

Peridural Segmental Anesthesia.—The aim of the new method of regional anesthesia described by Dogliotti is to utilize the advantages of the subarachnoidal spinal anesthesia and at the same time eliminate its disadvantages. In the course of anatomic studies the author discovered that the epidural space is comparatively wide and can be opened at any level except the occipital. He intended to introduce the anesthetic solution into this space at a level corresponding to the operative field, in order to bring it in contact with the nerve trunks in their course within the vertebral canal, between the dura mater and the intervertebral foramen, and within the intervertebral foramina. He then describes the approach to the epidural space. He points out that the first sudden decrease in resistance to the passage of the needle indicates that the ligamenta flava have been penetrated and that the needle has reached the epidural space. Careful observation of this sign gives the certainty that one has reached the epidural space and has not passed farther. In more than 100 anesthesias which the author induced in this manner, this was found satisfactory. But to be entirely safe it is advisable to employ the fractional injection of the anesthetic. The quantity injected first should not be in excess of the maximal dose that is given in subarachnoidal injection (from 0.08 to 0.1 Gm. of procaine hydrochloride in from 8 to 10 cc. of a physiologic solution). If the first injection is made in the subarachnoid space, an extensive anesthesia sets in from five to six minutes later. However, if, as intended, the injection is made into the epidural space, the anesthesia is only slight after five minutes has elapsed. If one is certain of this, an additional 20 cc. is injected, and after another two or three minutes has passed, another dose of from 20 to 25 cc. is injected. The total amount should be from 50 to 60 cc., which is injected in three portions. During the injection the patient should lie on the side on which the deepest anesthesia is desired. The anesthesia generally develops ten minutes after the second injection. After fifteen minutes it is complete and it lasts from one to two hours. In evaluating the advantages of this method the author stresses the absence of hypotension, of paleness and of vomiting, and the fact that the pulse remains comparatively normal.

Zentralblatt für Gynäkologie, Leipzig

55: 3553-3616 (Dec. 12) 1931

Experimental Investigations on Exclusion of Kidneys by Means of Roentgen Rays. F. Keller.—p. 3554.
*Diagnosis and Conservative Therapy of Ureteral Fistulas. B. Ottow.—p. 3563.
Observations on Eclamptic Inhibition Diuresis. H. Rossenbeck.—p. 3580.
Exfoliative Cystitis. W. Lindemann.—p. 3582.
*Epispadias as Cause of Incontinence. K. Seynsche.—p. 3585.
Total Prolapse of Urinary Bladder. A. Mandelstamm.—p. 3592.
Instillation Catheter for Anesthesia of Female Urethra. H. Högler.—p. 3595.

Conservative Therapy of Ureteral Fistulas.—Ottow, after pointing out that the majority of ureteral fistulas result from gynecologic or obstetric interventions, emphasizes the great significance of the differentiation between total and partial defects of the ureteral wall. It should be determined whether the continuity of the tube is entirely interrupted or whether there is only an opening in the wall. This is possible with the aid of cystoscopy. The differential diagnosis is significant especially for the treatment, because in cases in which there is only an opening in the wall one can treat the patients in a conservative manner, namely, by introducing a permanent catheter. Because of its simplicity, the author recommends the wider use of this conservative method. However, if this treatment fails, a surgical intervention is necessary.

Epispadias as Cause of Incontinence.—Seynsche reports the clinical history of a woman with considerable epispadias. He evaluates three surgical methods that could have been employed in this case and then shows why he combined vesico-vaginal interposition of the uterus with direct muscular plastic operation. He shows that only the combination of the two methods produces conditions that correspond to the anatomic requirements of a vesical closure. The treatment resulted in complete recovery.

Nederlandsch Tijdschrift voor Geneeskunde, Haarlem

75: 5977-6060 (Dec. 12) 1931

Autochthonous Tropical Sprue in the Netherlands. G. J. W. Koolemans Beijnen.—p. 5977.
*Poliomyelitis Convalescents' Serum. A. Pondman.—p. 5986.
Vital Staining and Tumor Formation. G. A. Kreuzwendedich von dem Borne and R. E. J. Seldam.—p. 5999.
Roentgen Examination in the Gradanigo Syndrome. H. Burger.—p. 6003.

Poliomyelitis Convalescents' Serum.—Pondman explains, on the basis of the data found in the literature, how an opinion concerning the therapeutic value of poliomyelitis convalescents' serum was reached. Certain statistical data and opinions on the practical administration of the poliomyelitis serum are considered, and the author concludes that the serum, in more than one respect, has satisfied the original expectations. He discusses also the time of administration, place of injection and quantity of serum to be injected. He considers also the possibility of employing the convalescents' serum on a large scale.

Hospitalstidende, Copenhagen

74: 975-1002 (Oct. 8) 1931

*Angioma Venosum Racemosum of Pia of Spinal Cord. H. K. Lassen.—p. 975.
Subliminal and Autonomous Psychic Activity. I. Ostenfeld.—p. 985.
*Clinical Significance of Diastasuria: I. Normal Values in Persons with Normal Pancreas. J. Foged.—p. 991.

Angioma Venosum Racemosum of Pia of Spinal Cord.—Lassen's patient, aged 71, had had for five years mild but increasing symptoms of a nervous disorder, diagnosed as tabes dorsalis. Symptoms of compression of the spinal cord then appeared, with signs of ascending paralysis, and death soon occurred. Necropsy showed an extreme dilatation and intertwining of the subarachnoid vessels, mainly on the posterior side of the spinal cord, from intumescentia lumbalis into the thoracic region and, less intensively, to the lowest cervical vertebra. Histologically the changes seemed to consist of a hypertrophic thickening of the walls of the vessels resembling the primary stages in the formation of varices elsewhere. Corresponding to the extent of the extramedullary changes there were in the spinal cord extraordinarily marked degenerative processes in the nerve tracts in the white matter together with pathologic increase of the blood vessels in both the gray and the white matter. While tabes dorsalis could not be excluded, the main diagnosis was angioma venosum racemosum of the pia of the spinal cord. No syphilitic stigmas were found in the organs. The author states that there are in the literature thirty cases of venous dilatation causing symptoms of compression. With suspected angioma, operative treatment is advised. In nine of the twenty-one patients operated on, improvement or disappearance of symptoms followed.

Clinical Significance of Diastasuria.—On the basis of about 3,700 determinations of the urinary diastase in 287 patients with a normal pancreas and 841 with probably a normal pancreas, Foged states that the normal value of the diastase concentration may be as high as 200 and that in patients with acute or chronic abdominal disturbances a diastase determination of up to 300 cannot be regarded as a certain symptom of pancreas disorder.

74: 1003-1018 (Oct. 15) 1931

*Spondylolisthesis. J. M. Wollesen.—p. 1003.
Acetylcholine: Use in Arteriosclerotic Pain and Gangrene. E. Bloch.—p. 1014.

Spondylolisthesis.—Wollesen says that spondylolisthesis originates on the basis of a congenital defect in the vertebra accelerated by static conditions or by trauma. The insidious cases, which develop slowly during the course of months and years, especially call for the attention of the physician. The sensation of exhaustion in the lumbar region demands thorough consideration of the differential diagnostic possibilities, and if the pain resists medical treatment the diagnosis of rheumatism or neurasthenia cannot be accepted. Roentgen examination gives scanty information on the earlier stages of spondylolisthesis unless there is a prespondylolisthesis, but is of indispensable value in excluding other disorders. Treatment is operative, Albee's method for tuberculous spondylitis being used. The spinous process is split and a portion of the tibia introduced; the result resembles that accomplished by nature in fracture of the column with normally developed bones, when a bony connection is made by means of callus. In his case examination eight months after the operative treatment showed absence of aggravation of the spondylolisthesis, and the patient was wholly without subjective symptoms.

Nordisk Medicinsk Tidskrift, Uppsala

3: 737-752 (Nov. 21) 1931

*Present Status of Chemical Prophylaxis of Syphilis. P. Lépine.—p. 738.
*Pulmonary Tuberculosis and Diabetes Mellitus. E. Møller.—p. 742.
Third Northern Congress on Physiology. A. V. Sahlstedt.—p. 748.

Chemical Prophylaxis of Syphilis.—Lépine calls attention to the fact that the three most powerful antisyphilitic agents available play a part in prophylaxis apparently proportional to their curative ability, and in it each may be said to have its specialty: mercury for local prophylaxis, arsenic for general and rapidly effective protection, and bismuth for the maintenance of a deep immunity.

Pulmonary Tuberculosis and Diabetes Mellitus.—Møller reports the case of a patient, aged 52, with slight adiposity, diabetes mellitus, fibrocavernous tuberculosis of the right lung, tuberculous laryngitis, slight arterial hypertension, arteriosclerosis and slight myocardiac degeneration, the most important diagnosis being the tuberculosis and the next in importance the diabetes. He calls attention to the unfavorable effect of diabetes on pulmonary tuberculosis and to the particularly insidious onset of the tuberculosis in cases with diabetes; occasional stethoscopic examination of patients with diabetes is recommended. The origin of the tuberculous infection in this case is unknown, but a familial disposition is probable and the diabetes is thought to have played a part. A familial disposition to diabetes is also likely. In treatment of the tuberculosis, strict observance of the diabetic diet is urged, with general hygienic treatment.

Ugeskrift for Læger, Copenhagen

93: 1121-1148 (Nov. 12) 1931

*Aneurysm of Aorta. H. C. Gram.—p. 1121.
Considerations on Modern Therapy of Syphilis: III. (Seroreactions). O. Haslund.—p. 1125.

Aneurysm of Aorta.—The case discussed by Gram is that of a seaman, aged 60, with syphilitic infection dating back forty years. The main diagnosis is aortic aneurysm, with syphilis, arteriosclerosis, aortic insufficiency, myocardial degeneration, extrasystole, pulmonary hypostasis, albuminuria, and paralysis of the left recurrent nerve. The author warns that in syphilitic aortitis early diagnosis means everything.

93: 1149-1170 (Nov. 19) 1931

*Hypertension and Complications. C. Holten.—p. 1149.
*Case of Slow Lead Poisoning with Peculiar Etiology. K. Winge.—p. 1154.
Epidemic Myositis. E. Sylvest.—p. 1155.

Hypertension and Complications.—Holten presents a case of primary, so-called essential hypertension in a woman, aged 51, as a good example of the complication of secondary disorders of the heart, brain and kidneys seen in hypertension. The second aortic tone is accentuated, the heart is enlarged and there is grave degeneration of the myocardium. The apoplectiform attack with slight paralysis of the right arm and right facial nerve three months before the start of treatment is ascribed to a cortical or subcortical brain lesion with thrombosis as the probable cause. The only established sign of renal disorder was a slight albuminuria when treatment began.

Case of Lead Poisoning.—In Winge's patient with history of gallstone colic five years earlier and anemia, bradycardia and nervous disturbance since then, there had for the last half year been marked exhaustion with pain in the epigastrium, finally followed by pronounced pain in the epigastrium and nausea. The patient was found to have been employed for seventeen years as scorekeeper in a poorly ventilated rifle shooting gallery; the lead bullets, striking against the iron plate behind the target, where he stood, raised considerable lead dust. Examination of the gingiva and of the blood established the diagnosis of chronic lead poisoning. The earlier symptoms are thought to have been the first signs of the disorder.